

# ARMED FORCES

ARMY • NAVY  
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COAST GUARD  
MARINES

# MANAGEMENT



**NOVEMBER  
1956**

## Feature

**What the Two T's Mean  
in Marine Aviation  
Management**

**By General Schilt**

**On The Cover**

Lieutenant General Christian F. Schilt, a pioneer of Marine Aviation and winner of the Nation's highest decoration for bravery, has seen action with Leatherneck air units in World Wars I and II, the Haitian and Nicaraguan campaigns and the Korean fighting. He is now serving at Marine Corps Headquarters, Washington, D.C., as Director of Aviation; Assistant Commandant of the Marine Corps for Air; and Assistant Chief of Naval Operations for Marine Aviation.



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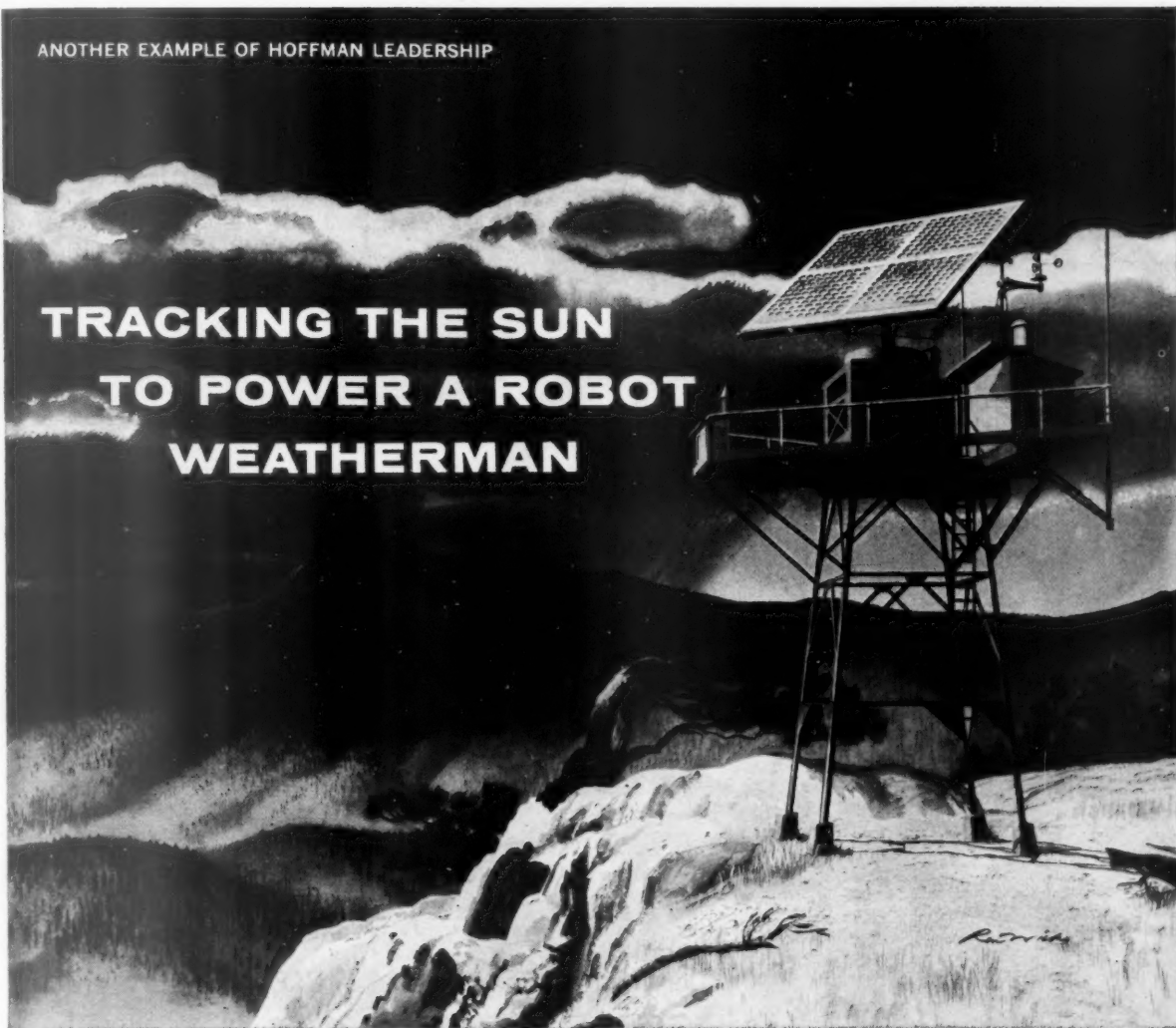
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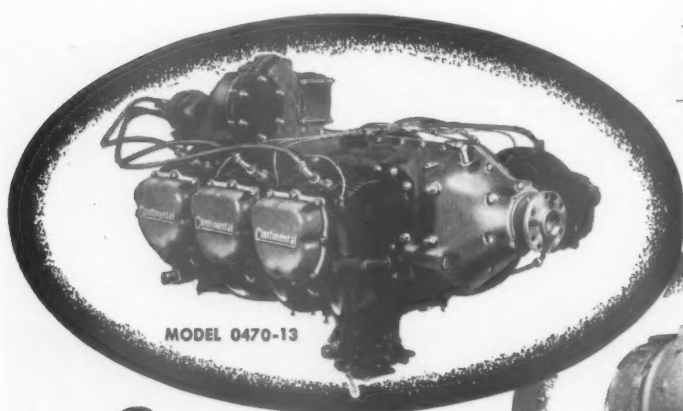
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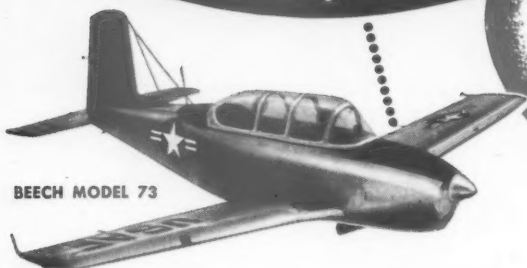
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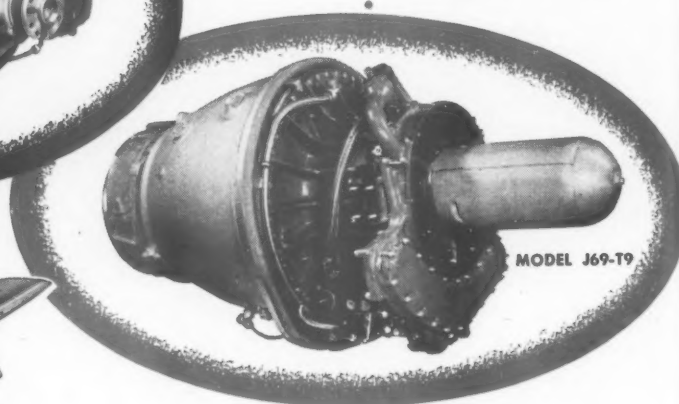
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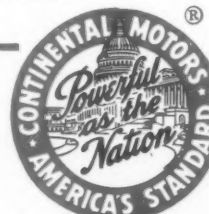
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# ARMED FORCES

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# MANAGEMENT

Volume 3

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Number 2

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# What the Two T's Mean In Marine Aviation Management

**Command's Inherent Responsibility to be Good  
Management Means Be Timely and Be Timeless . . .**

**T**HE MARINE CORPS' fifth Commandant, Colonel Archibald Henderson, left his Washington headquarters in 1836 to personally lead the Marines in a campaign against the Seminole Indians in the swamps and forests of the Florida everglades. Legend has it that he posted the following note on his office door as he departed: "Gone to fight the Indians. Be back when the war is over." As we regard with some envy this singular escape from burdens of Headquarters duty, we must appreciate that Colonel Henderson's action was not one of capricious self-indulgence or self-aggrandizement. Rather it was an act of inspired leadership cannily executed to meet a military requirement. The Marine expeditionary force had to be gathered in bits and pieces from Marine detachments among the Navy's scattered ships and bases. There was no time for regrouping and training. A strong unifying catalyst was needed to transform the bits and pieces into an integrated fighting force. What better rallying point than the "old man" himself closing up shop to take command. The campaign was successful. Colonel Henderson, while he was forced to return to Washington before its close, had made the essential contribution at its beginning. A textbook definition of his action might be "inspired military command". It was as well—good management. This example points out two important aspects of management: its timelessness and timeliness.

It shows management to be implicit in all mili-

tary decisions, and it establishes management as an inherent responsibility of command.

Its incongruity to today's world highlights the vastly broader connotations of management that are applied to our complex military structures and problems. True, management is still implicit in the correct answer to a simple problem, but it has become a science which gives us yardsticks and systems for organizing and acting.

Today, management is a dynamic concept in the Marine Corps. It means the application of scientific principles and techniques to operating problems and working relationships. No longer a passive descriptive term, management provides the commander with practical working tools to assist him in his quest for efficiency.

Marine Aviation is essentially a combat arm. Its orientation and energies are concentrated on its integrated role in a combat-ready fleet marine force. Its ability to mount and sustain heavy striking action despite its small size lies in three factors in which management is a dominant element:

The integration of Marine Aviation in the Marine Corps

The integration of Marine Aviation in Naval Aviation

The utilization of scientific management processes at all command levels through participation in the Marine Corps Management Improvement Program.

*Marine Aviation—an integral  
part of the Marine Corps*

The statutory authority for Marine Aviation lies in the National Security Act of 1947 with amendments of 1949 and 1952 which stipulates that "The United States Marine Corps within the Department of the Navy shall be so organized as to include not less than three combat divisions and three air wings . . . (and that) the Marine Corps shall be organized, trained and equipped to provide Fleet Marine Forces of combined arms, together with supporting air components . . ." The aviation requirement is clearly spelled out as that needed in an integrated force of combined arms. The term Marine Aviation does not apply to a separate entity within the Marine Corps, but rather to the aviation components of a balanced air-ground team. Approximately one-third of the Marine Corps' officers and one-fifth of its enlisted serve in aviation organizations. Seventy-four per cent of the aviation officers and seventy-eight per cent of the enlisted are in Fleet Marine Force billets, and



**By Lt.-Gen'l. Christian F. Schilt, USMC**

the remainder are in the supporting establishment comprising air stations, schools and miscellaneous activities such as Marine Corps Headquarters. This high ratio of operational forces to support establishment is due in part to the high degree of air-ground integration within the Marine Corps. Recruiting and recruit training are functions of Marine Corps-wide support. Small numbers of aviation technicians may be assigned to specific billets requiring their background or skills, but there is no participation of Marine Aviation as a separate entity. The complex of schools operated by the Marine Corps to train officers and enlisted in other-than-aviation subjects is another area in which the integrated Marine Corps is evident. Aviators and enlisted aviation specialists serve on the staffs of these schools in all billets requiring their skills. The professional schools at Quantico provide training for aviation and ground officers alike. Current class rolls at the Junior and Senior

Schools (Amphibious Warfare) shows more than a third of the students to be aviators. Within Marine Corps Headquarters we find that all matters which are not fundamentally aviation in character are handled by the various divisions and agencies on a Marine Corps-wide basis. The extent to which this concept applies is typified in enlisted personnel policies. A little more than half of the enlisted personnel requirements in aviation organizations are for aviation specialists. These billets are, of course, filled by a cadre of trained aviation-duty-only personnel. The remainder of the billets are for personnel who possess skills on a Marine Corps-wide basis—administrative and supply, motor transport, carpenters, cooks, etc. The aviation requirements in these fields are included as part of the Marine Corps-wide needs. Personnel are trained and assigned on this basis so that a cook might serve a tour in the air base squadron of a fighter group and follow it with a tour in the headquarters and service company of an infantry battalion. Such overall integration offers obvious and necessary economies and efficiency in training, administration and assignment. Less obvious are the contributions to Marine esprit. In striving for teamwork as a balanced force of combined arms, we seek one title for each member whatever his specialty—Marine.

#### *Marine Aviation as an integrated part of Naval Aviation—*

Marine Aviation had its birth on May 22, 1912 when 1st. Lt. Alfred A. Cunningham reported to the Naval Academy for duty "in connection with aviation". He soloed on 1 August 1912 after two hours and forty minutes of instruction and received the designation of Naval Aviator number four. From that day the aeronautical growth and development of Marine Aviation has been as an integral component of Naval Aviation. Today all aircraft and aeronautical equipment used by Marine Aviation are procured by the Bureau of Aeronautics. Common funds are used to support the like Navy and Marine Aviation activities. Air base construction, development and maintenance are under BuAer con-

trol. All pilot training is conducted by the Naval Air Training Command. The technical training of Marine Aviation specialists is conducted almost entirely in the Naval Air Technical Training Command. Proper direction and control of this integrated Navy-Marine effort is afforded by Marine representation in the offices and agencies of the Chief of Naval Operations and the Bureau of Aeronautics. Similarly, Marines share the instructor and support load in the Naval Air Training and Technical Training Commands. At Marine Corps Air Station, Cherry Point, North Carolina, the Marine Corps runs one of the Bureau of Aeronautics' overhaul and repair activities. Here 468 Marines and 1859 civilians overhaul five aircraft types.

Thus, in aviation supporting functions Marine Aviation is able to share in the scaled economies of the larger Naval Aviation establishment. Integration here is similar to that enjoyed within the structure of the Marine Corps. Obviously, the ability of Marine Aviation to maintain itself as a predominantly operating-force-in-readiness is in a large measure due to the efficiency inherent in its integrated roles in the Marine Corps and Naval Aviation.

#### *Management Improvement Program—*

Aviation commanders, both in the fleet marine forces and in the supporting establishment, do not rest on the laurels of an inherently efficient system. Continuing and systematic effort is underway to increase operating efficiency through management improvement practices. With origins in the Headquarters - guided Marine Corps Management Improvement Program, command management in Marine Aviation works on the principle of "helping the officer to help himself". Three command tools are considered to meet this criterion on a widely applicable basis. These are:

**Local command work measurement**

**Work simplification**

**Organization analysis**

All three tools have constant ap-



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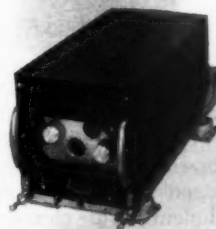


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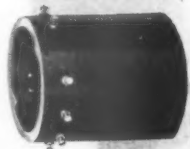


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plicability and interaction. In the classical pattern, local command work measurement is the starting point. This is the fact-finding phase of the management program. The primary quest is to gain information about the volume of work turned out, and the number of man-hours involved in the process. Through this process problem areas are revealed which may then be attacked in the application of the subsequent steps of management improvement. These steps, work simplification and organization analysis, are complementary in that one almost inevitably leads to the other so that the completed pattern of increased effectiveness involves both more efficient working techniques and from thence, a more efficient organization.

A recent management project introduced the Fleet Assistance Program which has permitted a reduction of over six hundred support personnel at our major air installations without loss of operating effectiveness.

#### *Fleet Assistance Program*

The Fleet Assistance Program was evolved as a formalized, sanctioned answer to the problem of efficient personnel utilization when fleet marine force operating groups are based at major air station establishments. The elements of the problem were many and diverse. Marine Aviation's fundamental self-sustaining tactical organization is the Marine Aircraft Group. Normally comprised of three squadrons of tactical aircraft, one air base squadron, and one headquarters and maintenance squadron, the group is organized and equipped to sustain its own operations on an advanced base air field. It includes therefore in its air base squadron the various components of air field support and operations; crash and rescue, visual and radar traffic control, weather service, etc. For a group to be combat ready, the personnel required for these functions must be both ready and available for deployment. When, as is sometimes the case, a group is based by itself on a semi-permanent CONUS air field of small size, the air base squadron carries out its designated functions much in the manner as it would in the advanced base situa-

tion. A Marine Aircraft Group is operating at NAAS Edenton, North Carolina, on this basis. It is not practical, however, to provide each CONUS-based Marine Aircraft Group with its own operating field. The high costs of runways and other permanent plant installations, the acquisition of land, access to operating areas are all factors which have dictated the utilization of a few large permanent air installations in the United States, rather than many smaller fields. The two major Marine Corps Air Stations at Cherry Point, North Carolina and El Toro, California, for example, accommodate several operating groups as well as wing and training organizations. These installations must operate 24 hours a day throughout the year regardless of movement or deployment of tactical units. Fire and rescue functions, air traffic control and all other base service functions are necessarily air station responsibilities. The problem then was to correlate the needs of both tactical groups for combat readiness and the air stations for adequate personnel support for daily operations without duplication of effort or inefficiency.

Under the auspices of the Avia-

tion Distribution Organization Section of the Headquarters, a team of three officers and a civilian visited each major air station and worked in close cooperation with the station and Fleet Marine Force staffs. The three management tools were applied step by step. Work measurement studies revealed the problem areas. Aerologists, for example, would have to be maintained at table of organization strength in the operating groups because of the long lead time involved in their training. The station, likewise, would have to have a certain minimum number permanently assigned so that operation could continue in the temporary absence of tactical groups. It would thus be necessary in this occupational specialty to maintain strength a little above that required for normal operations. This was not prohibitive because of the small total numbers involved. Crash crewmen, because they could be readily trained on-the-job, involved less of a problem, and their strength could be correlated to current operational needs. Each occupational specialty was analyzed and measured against work requirements in this manner. During this study the functional efficiency

### **Army's High Powered 'Telescope Tracker' Eyes Missiles at 300 Miles—in Color!**

Washington (AFPS)—A giant "telescopic tracker" that can trace a fast-moving missile 300 miles away in natural color on its scope has been developed by the Army Signal Corps.

The ton-and-a-half optical system, which has a 400-pound, 160-inch focal length lens, simultaneously and automatically takes black and white photographs of rockets, jet planes or "other flying objects," the Army said.

Now being tested at the White Sands Proving Grounds, N.M., the tracker can be used to follow high altitude meteorological balloons and to locate the "space position" of shells and missiles while they "home" on a target.

Designed to operate with radar tracking instruments, the optical tracker "functions with a high degree of accuracy," and sharply defines the difference between two objects moving at the same time within its range.

Built on a pedestal mounted on a mobile platform, the equipment "has great stability."

The casting is designed to allow inter-changeable mountings of 160-inch, 80, 40, and 20-inch focal length lenses.

The tracker may be operated manually. The operator sits on a rotating seat attached to the pedestal and tracks the target with a 10, 20 and 40-power telescope.

To position the tracker, he manipulates a rotating steel sphere or "crystal ball" set into the control panel.

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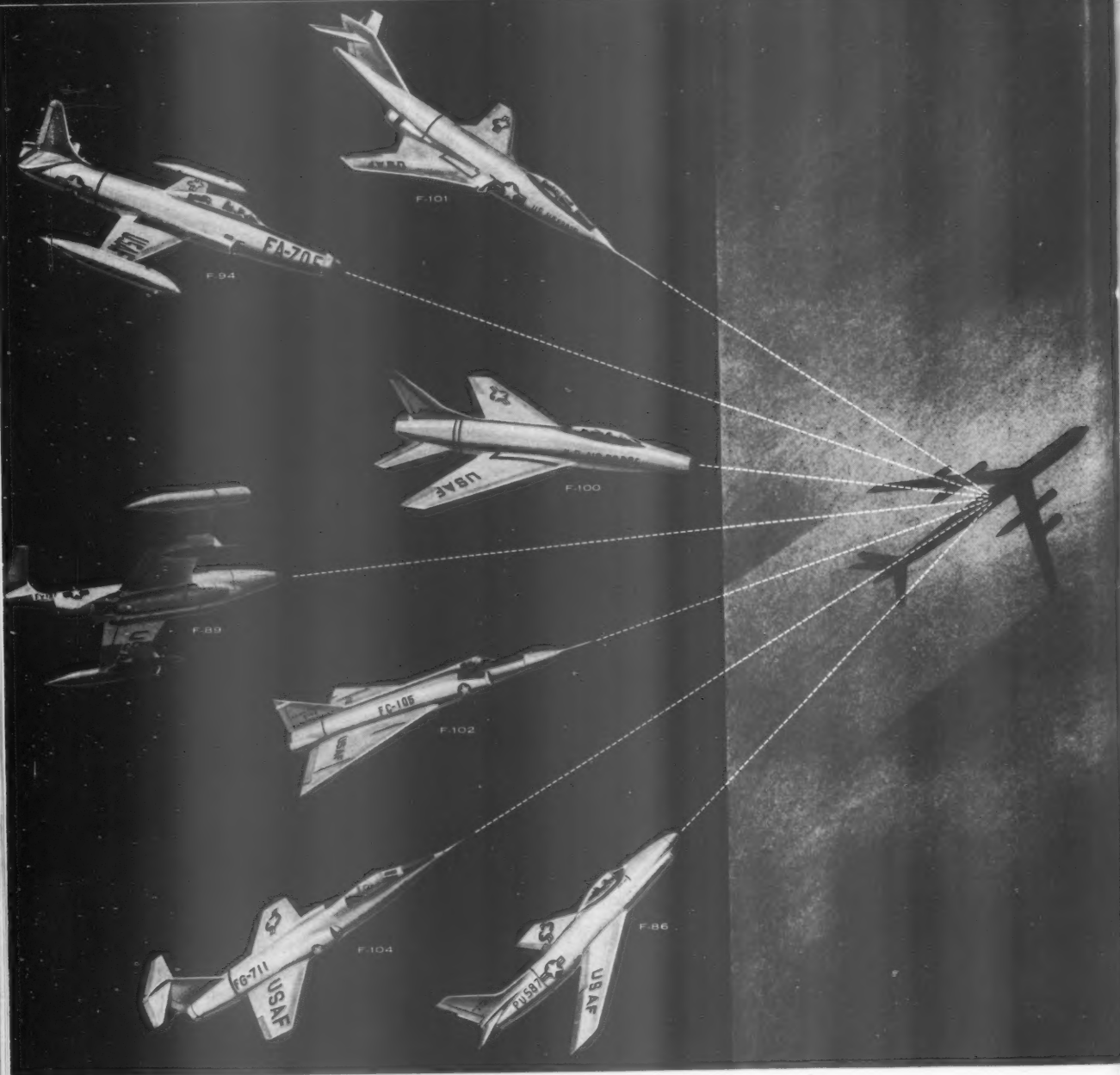


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of each unit and department was examined for possible personnel savings through work simplification. The second floor location of the flight clearance office at Marine Corps Air Station, Cherry Point, for example, was noted to be poor. A simplified and better integrated service has been devised wherein flight planning, aerology and the flight clearance desk are now grouped in a ground floor location. Personnel savings and increased convenience to pilots have been achieved. Organizational analysis was essential to the team's survey as solutions would be formalized in the organizational structures and allowances of the air stations and operating groups. Analysis clearly established the preeminence of the tactical organizations. Their strength and structure had to remain geared to their combat missions. The air stations whose mission it is to support the operations of the tactical groups were amenable to a flexible structure in which their functional organizations could be expanded or contracted through personnel augmentation from the supported groups. Tempered by the considerations and planned improvements in efficiency developed in the first two management steps, air station tables of organization were analyzed and revised to reflect a systematic plan for personnel expansion and contraction based on the fluctuating work loads incident to the tempo of operations. While each function reflected a separate problem and solution, the general pattern provided the air stations with sufficient permanent personnel to function on an eight hour day basis. The additional personnel required for 24 hour operation constituted the augmentation from the fleet units. All evidence indicates that this program is achieving its objectives. Improved operating efficiency and planning data have been provided to all echelons. That so complex an integration of functions could be accomplished and formalized at substantial personnel savings can be credited largely to the guidance provided by the Marine Corps Management Improvement Program.

The complexity of military operations increases at an accelerated pace. Science, which has shown

man the way to harness and apply his resources, is the motivating force. It is fitting that the same science should be applied to military command. This is now being accomplished under the name of management. Marine Aviation, as an integrated fighting arm of the Marine Corps, seeks to make management a practical everyday tool of command.

### Earth Satellite Data Sought by Newest Missile

The University of Maryland and Republic Aviation Corporation jointly announced recently first flight of a new, extremely lightweight high-altitude research missile that raced 3,800 miles an hour into outer space, obtaining data for use in development of space vehicles.

First flight of the new rocket, which is small enough to fit in a family-size station wagon, lasted 5.6 minutes. In this time the missile streaked 80 miles up and relayed measurements of primary cosmic radiation, temperatures and spin of the rocket and acceleration experienced by internal equipment.

The rocket firing was the first of a series of correlated launchings to be made from different areas around the earth to probe the ionosphere, a layer of space above the stratosphere beginning 80 miles up. Data obtained from this and subsequent firings will be used by a group of scientists, headed by Dr. S. Fred Singer of the University of Maryland, to formulate an integrated picture of the upper atmosphere.

### 'Benny Suggs' Saves AF \$31 Million During '56

Washington (AFPS)—The Air Force achieved over \$31 million in first year savings through its civilian employee suggestion program during fiscal 1956.

The AF paid out \$809,568 during the year for 18,473 adopted ideas, a saving of \$39 for every dollar awarded.

The highest payment of \$5000 was made to an employee of the Newark Transportation Control Depot, for devising a "frame flat deck" to allow cargo vessels to carry more jet fighters.

### 3-D TV Manipulator Developed by Borg-Warner

An advanced type electro-mechanical manipulator for use with 3-D television for the fully remote handling of radio-active and other dangerous materials has been developed by Borg-Warner Corp.

The manipulator consists of a master or control unit which is connected by an electric cable to a remote "slave" unit that actually handles the dangerous radio-active material.

The two units may be a few feet apart, a city block, or a country mile, depending on the length of the connecting cable. For the longer distances, 3-D television equipment serves as the "eyes" of the operator. This type of TV gives a depth dimension to an image.

The television apparatus which enables the operator to "see" includes a camera at the "slave" unit and a monitor set at the control station. The image can be transmitted either by wire, as in the case of closed circuit industrial television, or by conventional telecasting methods.

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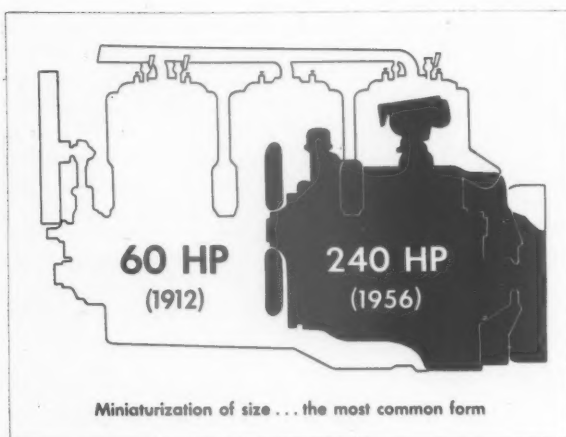
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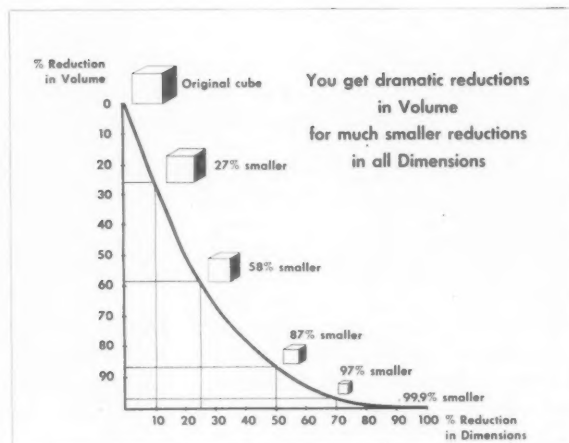
AM-13

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#### MINIATURIZED FOR MODERN MOTORING

Miniaturization is exemplified here in a modern automobile engine which has four times the horsepower, yet little more than half the length of 1912 automotive power plant of the same make. Miniaturization takes on many guises other than reductions in size—weight and cost, for example. It applies also to getting more service, more function, or more convenience per unit of volume or weight of product.



#### THE VANISHING CUBE

Thanks to the Vanishing Cube seemingly minor reductions in the dimensions of a product can produce dramatic savings in weight and volume. A cut in dimensions of only 10 percent reduces the volume by 27 percent; a dimensional reduction of just 25 percent can shrink weight and size by 58 percent. Other reductions can be worked out on the above chart which is reproduced from the booklet.

## MAKING MORE OF MINIATURIZATION

**M**ANAGEMENT should be making more of miniaturization—beginning with its very definition.

For miniaturization shapes up as a vital force for increasing industrial productivity and for meeting the many new challenges being encountered at the frontiers of science and technology.

To begin with, miniaturization

should be seen not just as **less and less**—that is, mere reduction in size. Actually it is **more and more**. The true purpose of miniaturization is to provide more utility, more service, more efficiency from less and less expenditure of material, effort and money.

It's a valid definition of the subject. For mere reduction in size, even in the case of the much heralded transistor, is meaningless unless translated into terms of more function, more performance per pound or per cubic foot of product.

Even more significantly, this miniaturization of more and more has broad application to a wide range of physical product. It is not limited just to the inherently small, nor to change in size.

It's a miniaturization that in addition to replacing the vacuum tube with the much tinier transistor also produces new automated machine tools—no smaller or perhaps even larger than their predecessors

—but with many times the productive output.

It's a frame of mind, too, that puts electronic computers to work to miniaturize clerical, accounting and engineering work.

It's not just the miniaturization of Operation Vanguard where the country's leading scientists are searching for the means to pack as much available scientific equipment into a 20-pound earth satellite. It's also manifest in a giant 1¼-inch boltmaker now being built for Cleveland Cap Screw Co., at a cost of \$500,000—the largest cold forging machine ever conceived, yet one capable of producing finished fasteners at a rate that would otherwise require a plant-full of machine tool equipment costing more than \$2,500,000.

This miniaturization is a planned, continuing increase in usefulness or function per unit volume or weight of product or per man-hour of time.

The pressing need for more miniaturization of this kind today and tomorrow stems from such factors as:

**COMPETITION** — Astute busi-

ARMED FORCES MANAGEMENT



**By Loring Roach**

Chief Development Engineer  
Standard Pressed Steel Co.

nessmen are realizing that they can sell more by making their products smaller, lighter or more functional.

**INFLATION**—Rising costs, particularly of labor, have created an economic need to make more from less.

**EXPANSION**—In many areas we are reaching the limit to which we can continue to improve product or service by mere increase in size. Limitations in boring-mill capacity and practical casting size, for example, are placing a limit on the maximum physical size of power-plant turbogenerators. Yet larger and larger capacity units are sought from the standpoint of efficiency. Fortunately, an approach through miniaturization has permitted designers to go to higher steam temperatures and pressures in order to get more from less.

**SPEED, TEMPERATURE AND PRESSURE**—As engineers push back the frontiers of product design, they are building equipment to operate at ever increasing speeds, temperatures and pressures. As they design their way into these extreme operating conditions, they encounter greatly aggravated problems of inertia, centrifugal force, creep and stress that call for vastly stronger yet more compact miniaturized components.

**TECHNOLOGICAL ADVANCES**—As modern technology develops new time and labor saving devices, as science permits man more and more to escape the limitations imposed by his two-legged, air-breathing, gravity bound anatomy, there is increasing demand to pack more and more equipment into a given space—more automated equipment and controls into industrial plants; more radar, oxygen, electronic equipment into aircraft and missiles; even more household conveniences into the home.

In recent years we have been hearing much of miniaturization—but mainly from the electronics and instruments industries and mostly about little things such as transistors, tiny ball bearings and the like.

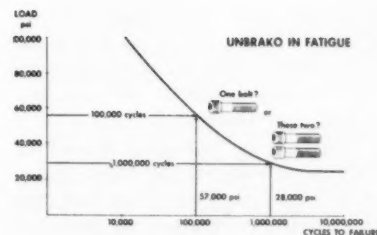
But if you've an eye for it, you

can see miniaturization at work in all fields of industry—in big things as well as small. Take the recent announcement of a giant electrical transformer—70,000 pounds lighter than its 1950 counterpart yet with the same electrical capacity. Still not a miniature—but miniaturization, nonetheless. The automotive power plant—though certainly not the rest of the car—has been miniaturized, too. One auto maker today produces a 240-hp. engine block that is little more than half the length of the 60-hp. model he produced in 1912.

Let's make the jump to still another area of miniaturization—the realm where size is not reduced though miniaturization takes place. Take the new high-strength titanium bolts that are now moving into critical aircraft applications. Though they are designed for size-for-size substitution for steel bolts, the result is a 43 percent reduction in fastener weight. Aluminum for steel gives a miniaturization weight ratio of approximately one pound for three.

In the machine tool industry, limitations imposed by the size of the workpiece as well as other considerations may not permit the tool builder to make appreciable reductions in the size of his product. Yet he is producing machine tools, perhaps no smaller than previous models, but with greater power, more flexibility, higher speeds and feeds. One of these new machines may produce 50 percent more parts per hour—thus miniaturizing first cost, floor space and operating expenditures. In place of machine tools, substitute transport vehicles or accounting machines and you can visualize the potential for miniaturization here.

But how, you ask, can you miniaturize by increasing size? Just as you do in all these other cases—that is, by making more from less. The Philadelphia Electric Co. is doing just this in a new power plant under construction. This leading utility has ordered a 325,000 kilowatt turbo-generator which, when completed, will be the largest of its kind in point of size as well as capacity. Yet it will do the work of more than six 50,000 kw units that collectively would cost more, require more raw material and take



#### MEANS TO MINIATURIZE

A valuable tool for designers bent on miniaturizing their products is the fatigue curve. In a novel booklet on the subject in which it takes the stand that miniaturization is not "less" but rather "more"—that is, "more from less"—the Jenkintown, Pa., fastener manufacturer shows how knowledge of fastener fatigue strength will permit designers to get more usable strength per pound of bolting—and, therefore, to miniaturize. The fatigue curve—drawn above for an SPS Unbrako cap screw—shows how many load impacts a specific bolt can withstand without failing. If, for example in the case above, the bolt is to be subjected to 1,000,000 load impacts during the life of a product, the curve shows that this load should not exceed 28,000 pounds per square inch. But, if the same bolt must last a maximum of only 100,000 cycles of vibration or other shock loading, then the applied load may be as much as 57,000 psi. In the latter case only half as many bolts need be used. Fatigue information of this kind points the way to the ultimate in design (and in miniaturization, too)—the use of only as much bolt as necessary.

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up much more floor space. Stockholders of this utility can look at their power giant as an example of miniaturization—both of facility and of investment.

You can, in fact, find miniaturization at work in the most unexpected places. Petroleum refiners today sell two gallons of gasoline that can do the work of three gallons of 1930 auto fuel. Even bulk chemical processors get into the act by concentrating their powders and liquids to get equal potency in reduced volumes.

But how do you get on the miniaturization bandwagon? How recognize the opportunities for producing more from less? How make the most of them?

First of all, miniaturization need not wait for the discovery of new wonder elements or even the coming of age of these already developed. There is so much room for size and weight reduction and functional improvement in so many products today that successful miniaturization is as much a frame of mind as it is a manipulation of transistors, semi-conductors and other wonder components.

In fact, in most products today, surprisingly large reductions in size and weight can be achieved by seemingly minor reductions in dimensions. This point is best illustrated by the Vanishing Cube effect. It's a basic geometrical fact of life that the volume of solids varies as the product of their three dimensions. Halve each side of a cube, for example, and you reduce size and weight of  $\frac{1}{8}$  its former value.

In the illustration on page 12 we have plotted the dramatic possibilities for miniaturization of a cube—the so-called Vanishing Cube—but the mathematics apply equally as well to a solid of any other shape and size.

The chart shows that a reduction of 10 percent in all the dimensions of a product actually pares 27 percent from the size and weight. A seemingly modest reduction of 25 percent in three dimensions produces a whopping 58 percent cut in size and weight. And so on down the line.

In many cases, the benefits of the Vanishing Cube can be realized by a study of a product's basic

function, a review and re-design of allowable stresses and necessary clearances and the intelligent use of available parts and components that have already been miniaturized.

There are many such miniaturized components on the market today—among them mighty midget motors that fit in the palm of a hand; tiny ball bearings for shafts as thin as 0.025 inch; high speed blowers and pumps that are little more than an inch in diameter; precision tubing as fine as 0.002 inch.

New yet proven materials such as titanium; older, lightweight ones like aluminum, are grist for the miniaturization mill. The improved, stronger plastics can substitute for much heavier metals in non-critical structural applications with resulting savings in weight and, in some cases, in over-all product size.

Still other components are tools for miniaturization not because they are smaller but rather because they are stronger—thus permitting you to do a job with fewer parts or less material. Thus, three heat-treated alloy socket screws with rated strength of 200,000 psi can be used in place of five ordinary 120,000 psi bolts.

This saving in fastener weight may seem minor but nonetheless can start a chain reaction of miniaturization in a product. Use of fewer or smaller fasteners may permit reductions in the size of the flanges or castings being fastened. These savings in turn may automatically point the way to additional size and weight reductions of other components and connecting members. This snowballing effect resulting from designing around the fastener may be considerable.

The designer and engineer, as mentioned earlier, can also turn to higher speed, pressure and temperature in his attempt to provide more from less. Though these extreme operating conditions create certain design problems, they can be valuable aids to miniaturization.

Higher speeds—particularly in rotating machinery—are usually more efficient speeds. Smaller pumps and turbines can often do the same work as larger ones when designed to operate faster.

Elevated temperatures permit



## One For Four . . .

PROPOSED RESEARCH AND DEVELOPMENT CENTER planned by American Machine & Foundry Company as headquarters for its Central Engineering Laboratories is shown above, would be located on a 38½-acre site, now under option by the company, adjacent to the Merritt Parkway at

the intersection of High Ridge Road in Stamford, Connecticut. Designed, as indicated in this artist's drawing, to incorporate the site's natural beauty to attain an academic appearance and atmosphere, the center would house operations now going on at four locations in Greenwich and one in Stamford.



greater utilization of the energy locked in coal, oil and other fuels. Boilers, jet engines, internal combustion engines are being designed for higher and higher operating temperatures in order to realize more of the theoretical thermodynamic efficiency of these prime movers.

The higher the pressure of a liquid or gas, the smaller the area over which it has to act in order to do the same amount of mechanical work. The hydraulics industry, for one, has capitalized on this principle in order to reduce the size of controls for machine tools. Whereas hydraulic controls with 1000-psi oil pressure might require a piston area of 5 square inches, new controls with working fluid under 5000-psi pressure can transmit the same force through a piston 1 square inch in cross-section.

Knowledge of loads and of the ability of structural parts to sustain these loads also plays an important role in miniaturization. Current lack of knowledge of this kind forces designers to rely excessively on high factors of safety to insure product durability and reliability. As a result many structures and products are built too large and too heavy—much larger than an intimate knowledge of loads and materials would warrant.

Today, suppliers, customers and the military in particular are scrutinizing more closely actual load conditions and the performance of critical components under these loads. More and more vital information is being made available that is relegating old handbook factors of safety to the discard pile.

Data on the performance of structural components under fatigue or live load conditions in particular is helping designers to miniaturize. Fatigue curves for threaded fasteners show how many load impacts a specific bolt can take before breaking. For example, if a bolt in a particular assembly will receive a maximum of 1,000,000 load impacts during the useful life of the product, then the bolt might be able to carry a design load of 28,000 psi. On the other hand, if the bolt has to last for only 100,000 load cycles, the load may be increased to 57,000 psi. In the

latter case only half as many bolts would have to be used. Complete fatigue information of this kind points the way to the ultimate goal of design and of miniaturization—the use of only as much bolt as necessary.

In summing up on miniaturization, it should be pointed out that a product is only as small or as light as the total of all its parts—and all the parts don't shrink in size and weight overnight.

In practice, first one, then another of the component parts is miniaturized before the smaller end-product, once only a gleam in a designer's eye, becomes a reality.

Even the advent of a transistor, 100 times smaller than a vacuum tube, does not signal the immediate reduction in size of all electronic gear from 100 to 1. First there is need for the shrinking of a hundred and one auxiliary components to connect, contain, complement and power the tiny wonder elements.

Military management—dealing as it does with every conceivable type of product and with many thousands of individual suppliers—

is in a particularly strategic position for further stimulating and encouraging interest in miniaturization.

This art and science of producing more from less is not only a profitable one, but downright essential to maintain an increasing level of productivity. All products—large or small, even those already miniaturized—are fair game for further improvement.

## Northrop Asks Merger With Vertol

Northrop Aircraft, Inc., has made a proposal to Vertol Aircraft Corporation of Morton, Pennsylvania, to consider combining the two companies, Whitley C. Collins, Northrop president announced.

Mr. Collins said that "Exploratory talks have been initiated with Don R. Berlin, Vertol president and chairman, and other Vertol executives". He pointed out that "These talks involve no commitments on the part of either company. Discussions of this nature between companies in complementary fields are not unusual."



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# Save Tomorrow's Dollars With Today's Ideas

**Navy Electronics Supply Office, Great Lakes, Illinois.** During the year ending 30 June 1956, the Incentive Awards Team, composed of Mrs. Barbara Richards and Mrs. Elsie Reinking, processed an average of 76 Beneficial Suggestions and Methods Improvement Proposals per month. This represented an increase of more than 250% over the average of 29 per month processed in the years of 1952, 1953 and 1954. Performance in the Incentive Awards area has kept ESO in first place among the Navy's Supply Demand Control Points. Further, it has not only consistently enabled ESO to exceed the average for Bureau of Supplies and Accounts managed activities, but even that for the Bureau of Ships, which was recently cited by the Secretary of the Navy for having the highest participation rate for Navy Bureaus and offices during 1955. Captain Leland P. Kimball, Jr., USN, Commanding Officer of the Electronics Supply Office recently presented Mrs. Richards and Mrs. Reinking Superior Accomplishment Awards of \$225 and \$175 respectively for their efforts and successful program.

**Seattle Army Terminal, Seattle, Washington.** Twenty-two employees of the Seattle Army Terminal recently received awards, certificates and \$1,395 for contributing to the efficiency and safety of the installation, Colonel John B. Grinstead, Commander, announced. Mr. Charles L. Beck, electronics equipment installer and repairman, received the second largest award ever given by SAT for a suggestion. Three hundred dollars were awarded Beck for designing a landing craft mast which can be raised and lowered without removing the radar antenna. The idea which saves manhours, reduces safety hazards while at sea and eliminates much repair formerly required, was

utilized on Army landing craft which made MONA LISA and DEW LINE missions to the Arctic this summer. Interested organizations may contact Colonel Grinstead for details and specifications.

**Castle Air Force Base, California.** Two Castle NCO's, T/Sgt Howard C. Griffith and M/Sgt Bernard E. Nathman, both of the 93d A&E Squadron, recently were awarded checks totaling \$125 for management incentive suggestions. Sergeant Nathman's suggestion, already winner of \$25 at base level, called for a A-121D Gyropilot test bench mobility box. Formerly three boxes were required for a move, and three hours needed to pack them. The operation now requires one box and forty minutes of time. Sergeant Griffith's idea provided indication of camera operations, with or without film on strike camera K-17 and K38.

**Norfolk Naval Shipyard, Virginia.** The biggest payoff since the inauguration of the Beneficial Suggestions Program at Norfolk Naval Shipyard in the fall of 1942, was recorded last month when a total of \$3,090 was paid to civilian employees for 92 approved ideas. The suggestions are estimated to provide a first-year savings to the government of \$80,456, plus intangible, safety, morale and service benefits. Two individuals, Ren J. Traylor and Robert E. Buhls, shared eight checks totaling \$605 as co-suggestors of four adopted suggestions.

**Headquarters Fifth Army, Chicago and Reese Air Force Base, Lubbock, Texas.** Cash awards to military personnel for management improvement ideas have been announced by both of these military installations. S3 Peter M. Murray, of Headquarters Fifth Army, recently received a check for \$10

for his idea of a more efficient routing of correspondence.

**Bureau of Ships, United States Navy, Washington, D.C.** Three BuShips employees were recently awarded \$2905 in awards for dollar-saving ideas. Mr. Samuel Eidensohn, and Albert S. Gates, received \$1405 and \$705 for increasing operational capabilities of fleet submarines with a water-cooled, improved battery ventilation system and method of circulating electrolyte which will save the Navy about \$1.5 million. More than \$170,000 will be saved by Mr. William P. Frost's idea to use steel oil drums coated with saran or epoxy resin making them non-corrosive, and using them for fuel tanks in small landing craft. Mr. Frost received \$795 for the suggestion. Presentations were made by Rear Admiral B. E. Manseau, USN, of the Bureau of Ships.

**Ramey Air Force Base, P.R.** Winner for the second time in the suggestion program last month was T/Sgt. Albert E. Pool, 72d Field Maintenance Squadron. Last April he submitted an idea to rework the Edison Continuous Wire Fire Detection System on B-36's for which he received \$25. Strategic Air Command recently decided Sergeant Pool's idea was worthy of their consideration and sent him a check for an additional \$50. The suggestion has been forwarded to Air Materiel Command for further evaluation and possible award.

**United States Coast Guard, Washington, D.C.** The complexity of modern electronics equipment often leads to operating problems which are both difficult and expensive to solve. The solution of one such problem, related to the operation of AN/URC-7 radio-telephone equipment, brought an employee of the Ninth Coast Guard District, George R. Luoma, a \$525 award. Mr. Luoma's award winning idea centered around the design of a remote channel selector for the radio-telephone which facilitates the usage of this equipment when the operator is receiving or transmitting messages from a remote location. This suggestion will eventually find application through-



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out the Coast Guard, and is expected to bring substantial cash savings as well as significant intangible benefits.

**Sioux Ordnance Depot, Sidney, Nebraska.** A total of \$530.00 has been awarded to civilian employees of this depot for their suggestions during the first six months of this year. Eighty-nine suggestions were received from 1 January through 30 June, of which 24 suggestions have been approved and adopted. Approved suggestions benefits were three fold; safety improvements, improved methods and monetary savings which are estimated as being well over \$6629.00.

"Mr. Myron Hornby and Mr. Forrest Kiernan, Ammunition and Explosives Lead Foremen, were jointly awarded \$100 for their idea of a mechanical bomb striper used to paint stripes on all types of bombs. The striper will enable one man to paint the stripes on as many bombs in two hours as it took him eight hours to accomplish with a paint brush, thereby saving the Government approximately \$2915.00 annually.

"Mr. Ralph R. Shaw, Freight Handler, decided that a new tool was needed to back dead vehicles into place in storage. The towbar which was used was made of a solid piece of metal which would get into a bind while backing and turning the vehicle into position. This would bend the towbar and three men would then have to push the vehicle into position manually. Mr. Shaw devised a towbar with a swivel, or universal joint, which would eliminate the binding and manual spotting of the vehicle. For this suggestion, Mr. Shaw received an award of \$60.00.

"Mr. LeRoy E. Grassle, truck driver, suggested that a two inch extension be added to the stop blocks used to block loads on roller conveyors in vans transporting ammunition. This will eliminate the possibility of the load slipping out of the van. For this suggestion Mr. Grassle received a \$15 award."

**Alaskan Air Command, APO 731, Seattle, Washington.** A management improvement idea by T/Sgt. George L. Buehl of the 449th

## Idea to Save 10,000,000 Dollars

**Bureau of Supplies and Accounts, Washington, D.C.** In what may well emerge as one of the largest Superior Accomplishment awards in Navy history, two BuSandA civilian employees recently received checks totaling \$5,000 for saving the Defense Department \$10,000,000 annually in transportation costs.

And if it's approved by the Civil Service commission an additional \$5,625 will go to Hobart M. Griggs, 53, and Dennis Mitchell, 64. Mr. Griggs is senior civilian in the Bureau's Freight Rate and Classification section (H4), while Mr. Mitchell has retired from the division since completing work on the king-sized beneficial suggestion.

The Griggs-Mitchell accomplishment resulted in reducing by more than one-half the rates paid by the services for rail shipment of inert projectiles, rockets, bombs, mines and associated parts. Since the 3 services ship close to 1,000,000 tons of these items annually (or about 1/4 to 1/3 of all tonnage shipped), the savings run to an impressive \$10,000,000 per year.

The award winnings are being divided 3/4 to Mr. Griggs, who was the principal suggester, and 1/4 to Mr. Mitchell. On the basis of the \$5,000 granted so far, Griggs has pocketed \$3,750 (less taxes) and Mitchell to \$1,250 (less taxes). If the Civil Service commission grants the extra \$5,625, it will boost Griggs' share to a whopping \$7,968.75 and Mitchell's to a respectable \$2,656.25.

Although the CSC has been the approving authority for superior accomplishment awards over \$5,000 since November 1951 (BuSandA is authorized to grant only up to that amount), the Griggs-Mitchell case is the first one it has had.

And as far as the Navy's Office of Industrial Relations can discover, the Griggs-Mitchell checks for \$10,625—if wholly approved—will be the largest handed out by the Navy since 1929 when another superior accomplishment award "of a similar amount" was granted.

The product of more than two

years' labor both on and off the job, the Griggs-Mitchell suggestion succeeded in shifting shipments of the inert weapons from their high-cost "class" ratings to lower-cost "bulk" ratings similar to those enjoyed by commercial shippers.

"Actually, I first got the idea to do this in 1950," said Griggs, "when I realized that freight rates paid by commercial suppliers for comparable iron and steel shipments were, in many instances, lower than those paid by the government."

Griggs went to work in earnest on the project in April 1953 when, after proposing his rate-reduction plans to the Rate and Rate Negotiation committee of the Department of Defense, they were turned down.

Believing he would overcome committee opposition, Griggs returned to his BuSandA desk to begin a 16-month job of preparing and arguing his case.

With Mitchell, he pored over hundreds of bills of lading, gathered statistics on weapons' shipments, and prepared a packet of charts to illustrate his findings. Much of this work was done off the job.

Then, in August 1954, the pair laid their exhibits and statistics before the Joint Freight committee of DOD (formerly the Rate and Rate Negotiation committee). Again the proposal met opposition, but, says the BuSandA statement recommending the Griggs-Mitchell award, "the evidence was so convincing and thorough (that all the services) finally agreed to go along with it..."

Still, Griggs' work wasn't finished. He had to "sell" the railroads on the idea, and it was this part of the job that certain committee members thought would be impossible.

Thanks to the ammunition he'd gathered in support of his conclusions, however, Griggs sold his product almost immediately. In fact, committees from the Southwestern and Western territory railroads were so impressed that they sent representatives to Washington to "iron out the details."

Fighter Interceptor Squadron that base supply procure a supply of

landing light lamps for replacement while the light assemblies are



mounted on F-89D jet aircraft, has been placed into effect throughout the command. Landing lights were heretofore sent to the depot for complete lamp replacement. The improvement will save many man-hours and increase the in-commission time of the aircraft.

**Fort Slocum, New York.** Captain Julius J. Haberman, veterinary officer, was recently presented with a commendation from Brigadier General Harold W. Glatly, First Army Surgeon, for saving the government more than \$169,000 in food contracts during the past three years. A second commendation was received from Colonel Charles E. Brown, Fort Slocum commander for professional proficiency.

**Bay Area Army Terminal Center, Ft Mason, California.** The largest cash award ever made by Army Transportation Corps installations in the San Francisco Bay Area has been given Miss Alma Soares, employed in the Pacific

Personal Property Service Center at Oakland Army Terminal.

Colonel Thomas R. W. Skinner, Commanding Officer of the Bay Area Army Terminal Center, presented a \$375.00 check to Miss Soares.

The award recognized nationwide adoption by the Army of Miss Soares' suggestion that the port-call date be made an integral part of the address placed on military baggage sent to Army terminals for shipment overseas. Inclusion of the port-call date enables shipping agencies and tracers to identify immediately the ship and sailing time of the owner of the baggage. Under the former system, it was necessary to search numerous lists with only the owner's name as a clue. Miss Soares' suggestion, which has been incorporated into appropriate Army regulations, will save an estimated \$30,000.00 a year at the Brooklyn, Seattle, New Orleans, Oakland and Fort Mason Terminals, according to the Office of the Chief of Transportation.

gestions from all personnel relative to Agency management and operations.

c. To stimulate and promote among all personnel a unity of purpose and accomplishment and stimulate Esprit de Corps throughout the Agency.

d. To develop Junior Executives by affording personnel who have demonstrated leadership ability an opportunity to participate in the formulation of Agency-wide policies and operations.

e. To improve efficiency through initiation and promotion of an incentive program whereby accomplishment or merit will be rewarded and given appropriate recognition.

f. To advance the prestige of the Agency with industry, the public, and other Government organizations growing out of their service together with The Army Signal Supply Agency.

If your Agency might profit, we suggest you inquire about additional details of organization through Armed Forces Management.

## Why Not Check Your Agency's Pulse As Does ....

### THE EXECUTIVE ASSOCIATION OF THE ARMY SIGNAL SUPPLY AGENCY

At the time of the establishment of the Executive Association late in the year 1952, the Founders dedicated themselves to the development of executive talent. This has found reflection again and again in the programs inaugurated during each succeeding year. Major General W. Preston Corderman, now Deputy Chief Signal Officer, was in command of the Agency when the Executive Association came into being. His insight into the advantages of stimulating thought and action via the Agency's civilian and military executive personnel gave rise to this organization which provides a direct path for two-way communication between the Command and operating personnel. This, of course, in no way by-passes the normal chain of command.

For the first time in the history of the Agency, there is a means by which the pulse of the organization can be taken and the opinions

of all operating personnel expressed and appraised by the Command. The Executive Association provides that means.

Throughout the entire life of the organization, each of the Commanding Generals of The Army Signal Supply Agency—Major General W. Preston Corderman (then Brig. Gen. Corderman), Brigadier General James S. Willis, and Brigadier General William L. Bayer, in succession—has given the Association his support unstintingly.

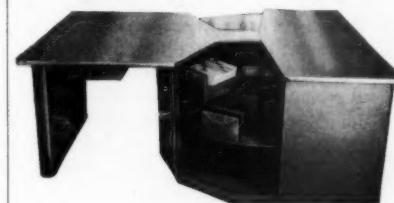
The Constitution of the Executive Association has among others, the following objectives:

a. To establish a Forum of Membership where ideas, suggestions, and constructive criticism that will advance and improve the Agency may be assigned for free discussion for development and forwarding specific recommendations to the Commanding General for approval.

b. To encourage, assist, and develop creative thinking and sug-



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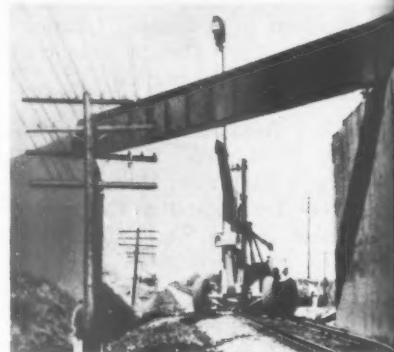
## Versatile "lift-and-carry" rig for military materials handling

This completely mobile unit is capable of lifting, carrying and placing heavy loads from *any* footing. No other crane gives you Tournapull-Crane's lift-and-carry advantages for all-around load handling and "roust-about" crane service. With versatility of many interchangeable tools, it has operating and maintenance cost of only *one*. Check these 7 exclusive features. See how Tournapull-Crane can be depended upon to speed-up military construction and materials handling:

- 1 **Powered mobility**...prime-mover's powerful diesel, torque-proportioning differential, plus flotation of 4 big, low-pressure tires, carry full loads over tracks, yards, pavement, blacktop, soft fill, etc. Travels job-to-job via highway, cross-country, or straddling rail tracks.
- 2 **Makes 90° turns** left or right, has power-steer plus independent-drive. Gives you accurate, simplified load-placing in restricted areas with minimum maneuvering. No other crane has similar versatility and ease of load handling.
- 3 **Stability without outriggers**...safely counter-weighted by entire prime-mover, this crane lifts and

carries its rated loads. Tournapull-Cranes can carry loads on short boom and short line with no dangerous swinging. Working off-track, it makes an excellent industrial yard tool, heavy railroad or construction crane.

- 4 **Three-way crane action**...with or without load, boom can be raised or lowered, extended or retracted...hoist-block raised or lowered by powerful electric motors operating singly or together for fast, safe spotting. Power-action up-and-down avoids jerking, handles load safely.
- 5 **Travels, lifts under low overhead**...will reach into 9'6" high doorway with boom lowered. Can work inside shops, warehouses. Can reach inside box-cars to remove heavy loads. Reaches under overhead structures, through low doors, under bridges, through ship gangways. Additional interchangeable booms available for special applications.
- 6 **Finger-tip control**...no levers to "fight". Dashboard electric switches control lift and steer, make operation easy and simple. Operators can be trained in a few hours.



- 7 **Few parts, low maintenance**...no complicated operating and driving mechanism. Tournapull-Crane operations are easily controlled by compact interchangeable electric motors. Rugged box-beam construction of carriage and boom stands up under extreme loads.

Tournapull-Cranes are available in three sizes		MODEL D	MODEL C	MODEL B
	WHEELBASE	16'	30'	29'3"
	HORSEPOWER	138	208	293
	MAX. LIFT	10 tons	20 tons	30 tons

Investigate Tournapull-Cranes for military applications. Let us give you information on interchangeability with other earthmoving and hauling tools for multi-purpose operations.

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**LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS**  
A Subsidiary of Westinghouse Air Brake Company

With string of cars in tow, SwitchMobile heads down track. Switcher can roll 1,250 tons of freight from a dead start.



Crossing yard, SwitchMobile rolls over tracks. Big, low-pressure tires won't damage tracks, ties, or switches.



# Switch engine on rubber

with "go-anywhere" off-track mobility

Here's an off-track switcher with locomotive power and features... a freight-spotter that travels along or across rail-lines... takes shortest route to job via right-of-way or highway.

This new, powerful, versatile, LeTourneau-Westinghouse SwitchMobile straddles or crosses tracks easily...won't damage switches or chamfer ties. Off-track, switcher crosses shoulders, ditches, blacktop, sidewalks, or fields.

## 36,000 lbs. of rimpull

SwitchMobile's 208 hp diesel engine feeds power smoothly to four big, rubber-tired wheels which convert it to 36,000 pounds of rimpull. Machine starts 1,250 tons of rolling-freight.

With 6'3" width between big, low-pressure tires, unit straddles standard-gauge track. It rides on ties or ballast, rolls along over tie-ends, without damage to ties or tires.

## 60% vs 30% wheel friction

Rubber-tired SwitchMobile has twice the traction of comparable steel-wheel switchers. With four big 2' wide tires gripping ties or ballast, this 17½-ton unit develops a 60% coefficient of friction.

tion—double the 30% rating produced by steel wheels on steel rails!

SwitchMobile is *fast*. Operator hauls forward or reverse at rates to 16 mph. SwitchMobile can complete a switching job before a steel-wheeled switcher can maneuver into position!

## Full visibility for operator

Inside SwitchMobile's roomy cab, operator has full 180° visibility, front or rear. Controls swing in half circle to either of 2 operator seats facing in opposite directions. Controls are regulation railroad type.

## Built to ICC standards

This big, rubber-tired car-handler is a practical, tested railroad switcher—built according to ICC rules and recommendations. It features:

**Twin couplers**—Unit has standard AAR Type E couplers at front and

rear. Couplers slide 35" either way for off-center pulling and pushing.

**Twin air hose connections**—Westinghouse air-brake system with hose connections at each end of SwitchMobile.

**Two air reservoirs**—A 33-cu. ft. compressor, connected with unit's power system, supplies two 10.5-cu. ft. reservoirs. One tank supplies all air compression needs—the other is a reserve pressure tank.

**"Dead-man" controls**—Transmission automatically shifts to neutral if operator takes foot off safety pedal.

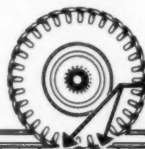
**Standard RR fittings**—Outside, unit mounts standard RR fittings—hand rails and steps.

## Get full details

Get complete specifications on the new money-saving go-anywhere SwitchMobile. Ask for more facts on how it speeds car-spotting for big cost savings.

SwitchMobile—Trademark SM-1140-RR-bw

Here's proof that rubber tires have twice the tractive advantage of steel wheels.



60% coefficient of friction for RUBBER



30% coefficient of friction for STEEL



**LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS**  
A Subsidiary of Westinghouse Air Brake Company



# Management Briefs from the Services

**Richmond Quartermaster Depot,** Richmond, Virginia. The Quartermaster Inventory Control Center has recently been redesignated as the Quartermaster Data Processing Center. Commanded by Colonel Harry W. Cooper, the current mission of the Center is (1) To exercise national stock control for general supplies items, airborne equipment, powered equipment, non-perishable subsistence, petroleum products and petroleum handling equipment, (2) To compute initial allowances, troop program requirements, troop movement allowances and mobilization requirements, and (3) To provide data processing services for Office of the Quartermaster General, the military subsistence supply agency, excluding perishable subsistence, and for the Richmond Quartermaster Depot.

**Marine Corps School,** Quantico, Virginia. Lt. General Merrill B. Twining, USMC, became the 25th Commandant of Marine Corps Schools last month at Quantico. General Twining brings 33 years of colorful Marine Corps duty and experience to the new post.

**Mitchell Air Force Base,** New York. Crack pilots of the Air Force Reserve's jet Fighter-Bomber wings shot it out at an aerial gunnery meet held recently at Natrona County Airport, Casper, Wyoming. Marking the first such meet in Air Force Reserve history, eight of the Reserve's nine Fighter-Bomber Wings entered a four-pilot team. Trophies and awards were presented by Major General Roger J. Browne, First Air Force Commander.

**Naval Air Station,** Corpus Christi, Texas. The Overhaul and Repair Department at NAS Corpus Christi has recently instituted an internal public relations program based on a series of "Management Bulletins" which explain the problems, policies and progress of that department. The unique experimental

step toward determining the ideas, problems and opinions of employees is proving of interest at the Station. It is believed that organizations desiring more information, may obtain copies of a recent bulletin and employee questionnaire, by writing to: COMMANDING OFFICER, NAVAL AIR STATION, ATTENTION: O&R OFFICER, CORPUS CHRISTI, TEXAS.

**Seattle Army Terminal,** Seattle, Washington. To equip themselves for industrial funding, civilian and military personnel at this Transportation Corps installation have attended more the 6,000 man-hours of classroom training. Industrial funding embraces a single revolving fund which replaces the multiple appropriations and budget programs system formerly employed by most federal installations. The new system places the Seattle Army Terminal on a financial basis similar to that under which most large commercial concerns operate.

**Air Force Personnel and Training Research Center,** Lackland Air Force Base, Texas. For achievements in management improvements, the Center was recently awarded the Air Research and Development Command's flag of honor. Based upon improvement in the scores received under the Management Control System of ARDC, the coveted prize is the envy of the command.

**USCG Icebreaker - Northwind,** Seattle, Washington. Captain C. W. Thomas, USCG, known as the Coast Guard's number one "Ice Man", is getting set to head back to the Antarctica as a task group commander in the Navy's "Operation Deepfreeze II." Sailing aboard the ship he once commanded the NORTHWIND, departure from Seattle is scheduled on November 8th bound for the Knox Coast via New Zealand. From there, the big breaker will clear a

path through the ice for the Navy cargo ship ARNEB so she can unload supplies on the continent and establish a base of operations.

**Army Ordnance Research and Development Center,** Picatinny Arsenal, Dover, New Jersey. Colonel Ivey O. Drewry Jr., has been appointed commanding officer by Lt. Gen. E. L. Cummings, Chief of Ordnance. Acting commander since Brig. General John A. Barclay's departure in May for the Army Ballistic Missile Agency in Huntsville, Alabama, Colonel Drewry's appointment was made during a personal inspection recently by General Cummings.

**USS Yorktown (CVA-10)** Alameda, California. The mighty YORKTOWN returned recently to Alameda after six months in the Far East. Military and civilian dignitaries together with thousands of friends and relatives greeted the 42,000-ton ship on her arrival.

**Wright-Patterson Air Force Base,** Ohio. Twelve years ago Stuyvesant Van Veen painted a 40 by 8-foot mural at Wright-Patterson Air Force Base—for free. Today his price for such a mural would be \$15,000. Painted while serving as a Sergeant at the base during World War II between military duties, the artist was back last month rejuvenating the wall mural and applying a permanent preservative. Van Veen is presently on the art faculty of the City College of New York.

**Simmons Army Air Field,** Fort Bragg, North Carolina. Major Morris G. Rawlings, Commanding Officer, recently announced that the new 110-foot control tower has been placed in active operation, and is proving itself valuable in handling the steadily increasing flow of traffic at the growing installation. The tower was turned over to the Army about three months ago and has been undergoing construction of a full scale radio console.

**Resources Management Course,** George Washington University, Washington, D.C. Eighty-seven senior Air Force officers are attending the thirty-third class, the first



of six scheduled in the current fiscal year. More than 500 officers and key civilians are given management training each year at George Washington.

**Great Lakes Naval Training Command, Illinois.** Captain Albert C. Borrows, USN, recently assumed command of the Naval Training Command succeeding Captain W. L. Harmon, USN. Captain Borrows, a 1923 graduate of the Naval Academy, reported from duty as Deputy Chief of Staff, Alaskan Command.

**Fort Leonard Wood, Missouri** A serious housing shortage in the vicinity of Fort Leonard Wood, will be alleviated by the construction of 1,329 family units on the post under the authority of the amended Capehart Housing Law. An additional \$3,900,000 improvement program for the fiscal year will modernize approximately 200 barracks, 15 mess halls, three bachelor officer quarters, and one nurses quarters.

**Ordnance Guided Missile School, Huntsville, Alabama.** The 5,000th student, Captain H. E. Brooks, Jr., received his diploma on 7 September, marking a milestone in the four-year history of the school. The commencement address was delivered by Major General John B. Medaris, Commanding General of the Army Ballistic Missile Agency.

**Abilene Air Force Base, Abilene, Texas.** The Air Force announced last month the Abilene AFB will be renamed **Dyess Air Force Base**, effective 1 December in honor of Lieutenant Colonel William E. Dyess. Colonel Dyess was killed in December 1943 while crash landing a P-38 on a vacant lot rather than attempting a relatively safe landing on a busy highway. During World War II, the Texas born pilot distinguished himself on many occasions and was a prisoner of the Japanese for a year before making his escape.

**U.S. Naval Base, San Diego, California.** More than 100 representatives from Naval activities and fleet commands gathered in San Diego to participate in a two-day Electronics Supply Office Regional

Conference last month. Captain W. G. Abbott, USN, supply officer of the repair facility, coordinated all arrangements for the meeting. Commander Julian Mccauley, USN, headed a five-man team from the Electronics Supply Office, Great Lakes, Illinois who led the conferees in discussion of newly established supply support policies.

**Coast Guard Air Station, San Francisco, California.** True to the tradition of saving lives—the Air Station here has been assisting crews of commercial airlines practice abandon-ship procedures. The fuselage of a Martin 404 aircraft, moored in the lagoon, has been the setting for summer-long drills of more than 600 airline flight crews. A recent practice drill unloaded 40 passengers in one minute and 43 seconds.

**United States Military Academy, West Point, New York.** The Military Academy is being featured on a new weekly television series over CBS-TV. The new series consists of 39 one-half hour shows with professional actors and actresses taking the lead parts and with cadets in the background. Much of the filming is being done on the grounds at West Point, thus assuring authentic and realistic action for the programs. These programs while providing drama and entertainment, will give an authentic portrayal of the life of a cadet, and allow the American citizen (the real stockholder in USMA) to see how West Point trains each member of the Corps of Cadets for his chosen career of service to his country.

**Engineers Research and Development Laboratories, Fort Belvoir, Virginia.** Fourteen employees recently completed a Conference Leadership Course and were presented certificates by Colonel E. M. J. Alenius, Assistant Director of the Laboratories. Designed to teach understanding of conference methods, its purposes and uses, and other related subjects, the graduates expressed high praise of the course.

**Headquarters Strategic Air Command, Omaha, Nebraska.** An announcement last month stated that



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Self-Guides go thru Tabulating Machines—No guides to remove! No guides to replace! Make your tab cards as fast as the fastest card file.

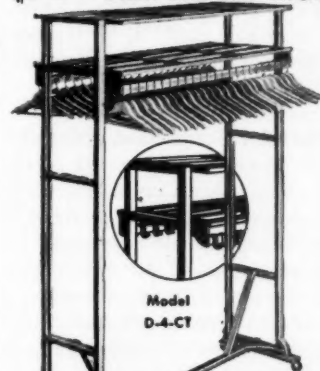
**Effective Tools for Effective Management**

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**New Double Capacity Checkerette®**  
**COAT and HAT RACKS**



**Answers the Wraps Problem in Funeral Homes**

This new Checkerette Hat and Coat Rack meets every wraps situation. It will stand rigidly for years in your parlors, will hold up to 64 coats and hats (with hooks) or 48 with coat hangers, on minimum floor space—4' x 20". Has hard rubber, ball-bearing swivel casters—goes where needed. Never sags, wobbles or rattles. Keeps wraps off seats, dry, aired and "in press."

Can be disassembled and stored or transported like folding chairs. Sets up in less than a minute without nuts, bolts or tools.

Strongly built of welded heavy-gauge steel "U" and "Box" forms, they will give lifetime service. Finely finished in baked on gray enamel. Write for Bulletin No. C7-455 Shows more complete line of modern wardrobe equipment.

**VOGEL-PETERSON CO.**  
1121 W. 37th ST. • CHICAGO 9, ILL.  
For more facts request No. 30 on reply card

SAC is moving ahead with the planning and organizational aspects of its strategic missile squadrons which will be ready to handle long-range guided missiles when they become operational. SAC will continue to depend on the combat crew and the jet bomber for its major striking power far into the missile era, the announcement said. When missiles of proven reliability, accuracy and destructive yield are available they will begin to augment the bomber forces.

**Fort Lee, Virginia.** The army Logistics Management Center which was established last May with the Supply Management Course as its senior study program, has announced the beginning of the first of five new courses of study. The Property Disposal Course which got underway on 1 October and will graduate about the 15th of this month, will be given twice this year. The Procurement Management Course will be offered four times during the year.

**Naval Air Training Center, Patuxent River, Maryland.** Rear Admiral C. H. Duerfeldt, USN, COMNATC, set a record recently when he became the first admiral to pilot his own plane aboard the Navy's new carrier FORRESTAL. The admiral flew a TF-1, and brought her aboard in a beautiful landing.

**Offutt Air Force Base, Nebraska.** Major General Francis H. Griswold, SAC Vice-Commander officially opened operation on the first radar set specifically designed for weather work. The AN/CPS-9, radar storm detection center has a maximum range of 250 miles and is capable of determining the tops and bases of clouds, icing levels and the stability of cloud masses.

**Coast Guard Receiving Center, Alameda, California.** Commander Curtis H. Jurgens, USCG, former skipper of the Alaska-based CITRUS, has assumed command of the Receiving Center relieving Lt. Commander Francis X. Riley, who takes command of the AVOYEL, one of the two 205-foot tugs recently obtained from the Navy.

**Camp Wolters, Texas.** Army heli-

copter flight training by civilian contract will begin on January 7th with a class of 50 pilot candidate. Southern Airways of Atlanta,

Georgia, were recent winners of the Army training contract, and plan to graduate a new class at Wolters every four weeks.



### Chrysler Says '57 Plymouth Three Years Ahead In Design

DETROIT—The 1957 Plymouth was displayed by dealers throughout the nation on October 30th.

Lower, racier looking and more powerful, the new model represents a complete change in styling, body structure and chassis.

"The car we have introduced," Plymouth President J. P. Mansfield said, "has the style and features of the car we had thought, only a few years ago, as possible for about 1960," Mansfield said. "We have moved faster than we had hoped. The public has shown an eagerness to accept dramatic change."

1957 Plymouth models are as much as five inches lower than corresponding 1956 models. The wheelbase has been lengthened from 115 inches for all models in 1956 to 118 inches for standard models and 122 inches for Suburban station wagons in the 1957 line.

The new car looks longer. Actually it is two-tenths of an inch shorter. The appearance of greater length comes from functional styling. A broad hood, soaring tail fins and forward thrusting headlight brow all contribute to the impression of length.

In the overall re-design of the front suspension, coil springs have disappeared. They are replaced by torsion bar springs which together with other equally basic improvements in both front and rear, produce a new kind of ride and new "handling."

The completely new front sus-

pension and steering system creates a remarkable degree of stability under forces of acceleration, braking, and cornering. At the same time, according to Plymouth engineers, the vehicle is more softly sprung than ever before.

All of the 1957 Plymouths have more powerful engines than 1956 models. The standard V-8 for all models except the Plaza is the new Fury 301, the number signifying displacement. The Plaza V-8 retains a displacement of 277 cubic inches but, like the Fury 301, has a new camshaft, new carburetion, and other innovations to achieve increased performance and economy.

The compression ratio of the Fury 301 is 8.5 to 1. Plaza V-8 compression remains at 8 to 1. The compression ratio of the Power-Flow Six is increased from 7.6 to 1 in 1956 to 8 to 1 in 1957.

Other innovations in the 1957 line include: new 14-inch wheels and low pressure, large section tires, new 11-inch brakes, of Chrysler Corporation's Center-Plane design, a new integral all-weather airconditioning system which combines heating, cooling, dehumidifying and ventilating in one underhood unit, available on all V-8 models, padded instrument panel and sun visors available as optional equipment, new dished hub safety steering wheel, new full-view windshields with 45 per cent greater glass area in sedans and Suburbans and 43 per cent greater in hardtops.

**Lieutenant James H. Doolittle** made the first all-blind flight at Mitchell Field, N.Y., Sept. 24, 1929.

# The Role of Management Tools in Making Military Decisions

## Conclusion

In the second (October) installment of this article, three basic types of military decisions were presented and discussed: operations, procurement, and research and development.

The principal objective of this third and final installment is to indicate in a general way what types of management tools and analytical techniques might be useful in assisting management in making decisions in each of these three areas.

## Matching of Management Tools and Decisions

Having discussed briefly the types of basic decisions facing military managers, the next step is to attempt to relate various types of management tools to the decision areas. This is a very important step; mismatching of tools and decision areas can only lead to attempts to make management tools do jobs they in fact cannot do.

Here again the discussion must of necessity be highly summarized, since an entire book could be written on the subject under consideration here. Nevertheless a general discussion may be useful in helping to understand some of the problems involved in matching tools and decision areas; and also it may help in clarifying the relation of financial management to over-all military management.

## The R & D Area

First, consider the research and development decision area. It is pretty clear that financial management *per se* can be of little assistance to decision making in this area. True, after an R & D program is established, it must be administered. And here some degree of financial management is necessary, though certainly not to the extent suggested in the Cooper Committee report on R & D. The really difficult problems, however, are associated with making the basic R & D weapon system decisions which must be made before a program can be set up. What tools may be of assistance in this decision-making area?

To the knowledge of the present authors there is only one major tool currently available that offers much hope of providing aid to

intuition and judgment in making basic R & D decisions. This tool is so-called "weapon systems analysis." It should be emphasized that this tool can only *help*; it cannot actually *make* the decision.

Weapon systems analysis is somewhat similar to "operations research" referred to previously with several important exceptions:

- (1) In systems analysis, the time horizon of the problem extends far out into the future.
- (2) The number of interdependent factors considered in a systems analysis is much larger than in a typical operations research study, and hence the "context" of the problem is much broader in the case of systems analysis.
- (3) The element of uncertainty is more important in systems analysis, and hence must be dealt with explicitly.
- (4) The problem of time phasing of equipment must be treated explicitly.
- (5) Very often some consideration must be given to enemy reactions.
- (6) Systems analysis usually calls for a broader concept of objectives and criteria appropriate to the broader and longer range problems of decision being analyzed.

Subject to the above differences, a weapon systems analysis usually proceeds along the lines previously described for an operations research analysis. An example might be somewhat as follows: Suppose that there are several alternative weapon proposals being advanced for the strategic air mission in, say, the time period 1960-65. The R & D decision makers have to decide which proposals to develop. A study might be made in which each of the alternative weapon systems is run through a strategic campaign analysis, with the systems which "look best" being determined on the basis of total system cost required to attain a specified level of target destruction. The results of the analysis would then be used as an aid to intuition and judgment in making the final R & D decisions.

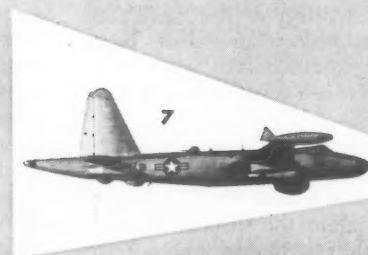
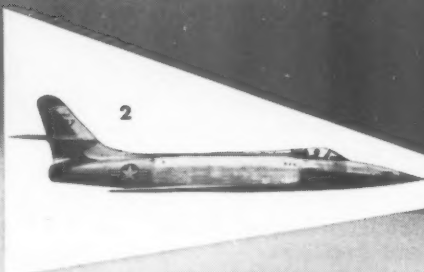
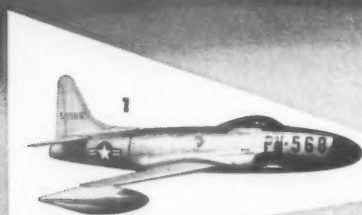
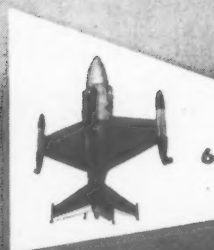
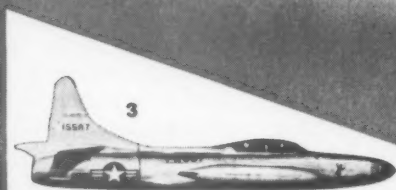
(Continued on page 34)



By G. H. Fisher (left)  
and David Novick







**From 15 years of jet-powered leadership  
comes America's first propjet airliner—**

# LOCKHEED ELECTRA

*The LOCKHEED ELECTRA's heritage of jet-powered leadership—gained from the design and manufacture of over 8,000 jet-powered aircraft of the widely varying types shown here—endows this pace-setting plane-of-tomorrow with qualities that will give you a thrilling, new way to travel in the jet air age.*

Sleek aerodynamic beauty, time-tested structural stamina, unique high-performance capabilities and exceptional economy of operation and maintenance are but a few of the LOCKHEED ELECTRA's points of superiority. Its mighty Allison propjet engines, combining jet thrust with proven propeller dependability, enable it to whisk passengers into and out of existing air terminals which now handle nearly 98% of total U. S. air passenger traffic.

The new LOCKHEED ELECTRA's high speed, swift climbing ability and king-size fuel reserves insure greater schedule regularity and

reliability—because the ELECTRA can depart on time and fly undaunted, above or around bad weather. And its spacious cabin compartments are so restfully quiet, so vibration-free and comfortable, you'll be amazed to discover you're traveling at 7-mile-a-minute speeds.

Unexcelled for short-to-medium range flights, the LOCKHEED ELECTRA brings the advantages of jet age air travel to all of the people, of all cities, everywhere—with commuter-like timetables affording travelers a wide choice of flights.

Now in production, the LOCKHEED ELECTRA starting in 1959 will go into service for American, Braniff, Eastern, KLM-Royal Dutch, National, Western and other leading domestic and foreign airlines—extending Lockheed's jet-powered leadership around the world.





# DELECTRA

**1. JET L-1000 Turbojet Engine**—designed and built by Lockheed in 1941 . . . incorporated many years-ahead features now widely used in present-day jet engines.

**2. JET F-80 Shooting Star**—first U. S. production jet fighter; first to exceed 500 mph on everyday Air Force duty, providing near-sonic flight experience.

**3. JET F-90 Penetration Fighter**, first U. S. aircraft to dive through sound barrier routinely—proving supersonic flight not awesome as pilots then thought.

**4. JET F-94 Starfire**, first of the almost-automatic all-weather jet interceptors—pioneered application of modern electronic equipment in jet aircraft.

**5. JET T-33/TV-2 Trainer**—world's first successful jet trainer, which gave America its vitally needed backlog of military jet pilots in record-breaking time.

**6. PROPJET R7V-2/C-121F Super Constellation**—world's fastest propeller-driven transport developing valuable new data for U. S. on high-speed prop-flight.

**7. PROPJET XFV-1 Vertical Takeoff Fighter** with 2 jet turbine engines and contrarotating props—expedited valuable VTO flight research/development.

**8. JET-ASSISTED P2V-7 Neptune**—7th in a hardy line of far-ranging U. S. Navy patrol planes, equipped with jet pods to increase attack and evasion capabilities.

**9. JET T2V-1 SeaStar Trainer**—"World's Safest," first production plane utilizing Boundary Layer Control for slow, safe landings and takeoffs on USN carriers.

**10. PROPJET C-130 Hercules**—the versatile new go-anywhere, haul-anything "strongman" of the USAF that led America into a new era of swift, low-cost movement of heavy cargo.

**11. JET F-104 Starfighter**—"World's Fastest Jet Fighter . . . America's Missile With a Man in It," capable of overtaking and destroying any aircraft.

**12. RAMJET X-7 Missile**, designed and built by Lockheed's Missile Systems Division, is one of a family of supersonic vehicles testing and developing air-breathing ramjet engines.

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# Washington Management

**Department of the Army.** Applications are being received for commissions in the Regular Army and will continue to be accepted until January 31, 1957. The Army intends to appoint about 7000 new Regular officers during the next two years ranging in grade from Second Lieutenant to Colonel. Final selection will be made by boards of senior officers presently being convened at the Department of the Army.

**Department of the Navy.** New instructions by which authority to classify positions subject to the Classification Act of 1949 have been delegated to the Navy's field commanding officers through their respective bureau chiefs. Assistant Secretary of the Navy (Personnel & Reserve Forces), Albert Pratt, in announcing this change, explained that the Navy had determined that more employee satisfaction as a tool of management were placed directly in the hands of persons

responsible for operation of the many important units of the Navy's vast industrial enterprise.

**Department of the Air Force.** A new research rocket that reaches several times the speed of sound in two seconds called the Hypersonic Test Vehicle (HVT) and designed as a free flight research tool to gather data at hypersonic speeds, has recently been announced. The first HVT developed by Aerophysics Development Corporation, in conjunction with ARDC's Wright Air Development Center is now nearing standardization. Twenty experimental models already have been fired of the new two-stage solid propellant rocket vehicle.

**Department of Defense.** Adoption of a uniform plan for the storage of household goods of military personnel implementing a Hoover Commission recommendation, has been announced with the assigned

responsibility that of the Department of the Army. The new regulation, entitled "Commercial Warehousing and Related Services for Household Goods of Military Personnel," provides local administration from 18 field offices located at military installations throughout the United States.

**Department of the Navy.** Buff-colored card checks have replaced the green paper U.S. Treasury checks at non-mechanized disbursing activities afloat and ashore. It is estimated that the savings will run from two-five cents per check under the new system. Change-over is scheduled to be made by January 1, 1957, and will allow the Treasury department to run its own reconciliation on a 705 computer.

**Department of the Army.** A rapid-firing 20 millimeter weapon, one of the first specifically designed for present supersonic jet aircraft, was unveiled last month at Aberdeen Proving Ground, Maryland. Named the Vulcan, the new weapon was developed by General Electric's Aeronautic and Ordnance Department under the sponsorship of U.S. Army Ordnance.

**Department of the Air Force.** Plans have been disclosed to dispose of \$1,250,000,000 in excess property during Fiscal Year 1957. The disposal program, a continuation of a similar one conducted last year, will be administered by the Air Materiel Command. After screening for reutilization, the property will be offered for sale, to interested civilians. As items become available for sale announcements will be made and sales held in the area where the excesses have accumulated.

**Department of Defense.** Representatives of six NATO nations recently received an indoctrination course in the Federal Catalog System. During the nine-day course the representatives after orientation, visited several installations to see the system in operation.

## NEW LOOK FOR "ARMED FORCES MANAGEMENT"

ARMED FORCES MANAGEMENT is being redesigned effective with the January issue to bring you more reading enjoyment. Beginning with the COVER which is being done by a leading New York artist, and extending through the DEPARTMENTS, ARMED FORCES MANAGEMENT is being reorganized from your suggestions, results of a recent readership survey. New Departments will include: "THE ARMED FORCES ON CAPITOL HILL", to be written by a well-known Washington journalist, to keep you abreast of legislation affecting the Defense services; a "BUSINESS AND FINANCE" section designed to bring you market trends together with an investment forecast, to assist in augmenting present and retirement income; a "PERSONAL BUSINESS" section being planned to offer assistance in the many problems of buying, renting and leasing homes, travel-tips and insurance programs.

To accommodate these new departments some consolidation will be made in our present format. A few changes will be noticeable in this issue, more in December and the completely "new look" is scheduled for January.

Editorially, ARMED FORCES MANAGEMENT will bring you, in 1957, a host of leaders both from industry and the services to assist you in furthering the slogan

**"More Defense From Each Dollar"**

**Department of the Navy.** The world's first seaplane tanker capable of simultaneously refueling four fighter aircraft, the Convair R3Y-2 Tradewind, has successfully accomplished this operation in flight off the coast of Southern California. Four Grumman F9F-8 Cougar jet fighters from VF 123 squadron, Miramar Naval Air Station, San Diego, California, were refueled in less than five minutes from the R3Y's four wing tanks. The four-engine turboprop Tradewind carries enough fuel to service eight fighter planes, and was designed as a dual purpose tanker-transport.

**Department of the Army.** Mr. John S. Bugas of the Ford Motor Company has been appointed as a member of the Secretary's Advisory Committee on Civilian Personnel Management. Mr. Bugas who served ten years with the Federal Bureau of Investigation prior to joining Ford, is vice president for industrial relations and a member of the board of directors of the Ford Company.

**United States Coast Guard.** A second invitation to be integrated as a Regular officer in the Coast Guard will be announced within the near future. Applications submitted prior to September 15th which was the deadline on the last program are being presently screened for selection. Plans call for two programs a year in the future giving officers a chance to be integrated with less loss of precedence than a yearly program affords.

**Department of the Air Force.** Elements of the Tactical Air Command were deployed recently from the United States to France, Northern Italy and Germany in another series of exercises designed to test the mobility of the Command. Participating were fighters, tactical bombers and reconnaissance fighters. Inflight refueling was utilized in the flight, and the exercise marks the first time TAC has deployed one of its new self-sustaining "mobile air strike forces" out of the United States.

**Department of the Navy.** Secre-

tary of the Navy Charles S. Thomas has established the operating agency which will carry out its Defense-wide Single Manager responsibilities for petroleum supply. With Rear Admiral Onnie P. Lattu, USN, as Executive Director, the new Military Petroleum Supply Agency will operate as a naval activity under management control of the Navy's Bureau of Supplies and Accounts.

**Department of the Army.** Establishment of a Quartermaster Radiation Planning Agency to develop plans for operation of the Army Ionizing Radiation Center has recently been announced. Organizationally the new Agency will function under the Army's Quartermaster Research and Development Command at Natick, Massachusetts. Eventually the agency will be located at the Army Ionizing Radiation Center.

### **RADC Demonstrates Air Force Microwave Relay System**

Widespread interest in the use of microwave equipment for the relaying of radar information was put on by the Rome Air Development Center at Griffis Air Force Base, Rome, N.Y. Among those in attendance were some 50 representatives of all the major air commands, Hqs. USAF, CAA, U.S. Weather Bureau, Signal Corps and other organizations.

After a talk on the "Present and Future Status of Military Microwave," by Mr. G. K. Bennison of RADC, Mr. Hans Ulander of Motorola discussed details of various microwave systems which had been developed by Motorola under the sponsorship of ARDC's Rome Air Development Center.

The demonstration itself consisted of a showing of two PPI radar indicators, one operating directly from a search radar, the other receiving its input from a two-hop microwave system totaling some 24 miles in length. Viewers were impressed by the comparison. To the eye there was no way of distinguishing between the two displays. Although for the sake of convenience the demonstration was limited to comparatively short

hops, it was pointed out that the same system could be used to transfer voice, teletype, radar data and control information and missile test range information over spans of hundreds of miles if need be.

### **RCA To Award USAF Radar Controllers**

Establishment by the Radio Corporation of America of annual trophy awards for proficiency achievements of radar controllers of the United States Air Force was announced by Theodore A. Smith, Executive Vice President, RCA Defense Electronic Products.

Named in honor of the late Brigadier General Clinton D. Vincent, USAF, the RCA trophies will be awarded yearly to radar controllers scoring highest achievement in the Worldwide Weapons and Gunnery Meets conducted annually by the Air Force. Controllers are USAF ground-based radar specialists who maintain a constant radar eye on the skies and advise intercept pilots on the location and movements of targets.



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ARMED FORCES MANAGEMENT ASSOCIATION

## NEWS and ACTIVITIES

### HAWAIIAN CHAPTER

A real treat was afforded the members and their guests at the September meeting of the Hawaiian Chapter AFMA, when the most unique motion picture ever filmed was shown. It is called "Production 5118", and it's so unusual that no ordinary conventional title seemed appropriate, so the producers released it under its original shooting title.

"Production 5118" was a mature, thought-provoking story of an adventure in communications—a man's ability to make himself understood.

Hawaii AFMA members and guests were led by Mrs. Mary Alice Duncan, Training officer, Office of Civilian Personnel, United States Army, Pacific, in a discussion of the film, by the use of a check sheet entitled, "What did this film communicate to you?". The suggestion was made that the group might discuss any of the listed items, or any additional items which the film communicated to them—we took off in almost as many directions as there were people to view the film. The discussion was free, thought-provoking, and the only conclusion reached was that we, as a group, had as much difficulty communicating among ourselves as did the characters in the film.

We should like to suggest the use of this film to other associations for its interest and stimulating effect on one of management's thorniest problems—communications.

### NEW YORK CHAPTER

Mr. Ben Fowler, President has announced that Mr. Richard Horch, Radio Corporation of America, was the guest speaker at the October meeting held on October 17th at the Seventh Regiment Armory in New York. "Salary and Wage Administration in Industry" was Mr. Horch's subject. The September meeting which featured Mr. Malcom Shaw of the American

Management Association as guest speaker, brought to the meeting one of the largest groups in the Chapter history.

### FORT BENNING CHAPTER

The Chattahoochee River development is a sound investment and will benefit all. James W. Woodruff, Jr., of Columbus, Ga., told the Armed Forces Management Association members at Fort Benning in September.

"This development will bring great benefits to three great states—Alabama, Georgia and Florida," Mr. Woodruff, president and general manager of WRBL-TV in Columbus, said. "Everybody will feel the economic gains. An inland waterway should put us in a much higher population bracket."

He pointed out that Houston, Texas, had a phenomenal population growth following its inland waterway. Since 1910, he added, the population doubled in the last three census.

Mr. Woodruff restated a prediction he made earlier in the year that the metropolitan population of Columbus by 1975 will be "between 350,000 to 375,00."

"And I'm being very conservative," he added.

He also pointed out that of all the major metropolitan cities only Denver and Atlanta do not possess inland waterways.

"I don't know if Denver will have one," Mr. Woodruff explained. "but someday there will be one to Atlanta."

When questioned about the boundary dispute between Alabama and Georgia, he replied that there will be an amicable solution because the river is a sound investment and it will benefit all.

### HISTORY OF MOHAWK CHAPTER NO. 26

The Mohawk Chapter of the Armed Forces Management Association held its first meeting 28

Oct. 55. Those present at the meeting decided that a chapter in this area would be a stimulus for group discussion on mutual management problems. On 18 Nov. 55 a local constitution developed by a Steering Committee was adopted and interim officers elected. On 20 Jan. 56 the Chapter held its meeting at the Beeches to discuss final plans for regular election of permanent officers, report on status of request for Charter approval, establish plans for inaugural dinner, and presentation of membership cards. Mr. Griffiths read a letter of congratulation from Mr. Ellis, Chief, Directorate of Manpower, Hq. USAF upon the approval and establishment of an AFMA Chapter in the Rome area. Major Hart resigned from his post as treasurer as he was reassigned to another area. Philip Van Winkle was selected to take his place on an interim basis. The president, Mr. Griffiths was authorized to establish workshops and name interim work leaders until permanent groups were established. The first subject chosen for discussion was, "What Is a Management Survey". On 22 Mar. 56 with more than 75% of the membership voting, permanent officers were elected, including: President, Robert L. Griffiths; Vice President, Garfield Wallace; Secretary, Norman Chisalbert; Treasurer.

On 14 June 56 the Chapter held its first annual dinner. The National President of AFMA E. D. Dwyer presented the Chapter Charter and Emmet Leahy, Management Consultant, spoke on the subject of "Paperwork Management".

The first regular meeting after the summer interlude was held 20 Sept. 56. At this meeting it was decided that the permanent meeting date starting in October will be the 2nd Thursday of each month. The subject for October was an analysis and discussion of a sample opinion survey taken recently in Rome Air Development Center. The November subject is "Priority Systems", as this is receiving attention within Rome Air Force Depot. A new dues paying system was approved allowing present and future members to pay in specified sums throughout the year if they so desire.



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# ORGANIZE YOUR REORGANIZATION

## The 160th Air Transport Wing Halts Guesswork with a 5-Step Procedure . . .

By Lem F. Thom

**R**EORGANIZATION is a subject which needs to be treated with respect because it is fundamental to Air Force planning. In most of the discussion we hear about reorganization, there is too much generalization based on personal opinions; off-the-cuff assumptions; and too many unverified theories which defy systematic analysis. To mitigate these banes of reorganization, a systematic approach must be used. In this respect the procedural aspects of reorganization must be full considered.

Here at the 160th Air Transport Wing (H), MATS, a reorganization is a management responsibility imposed by higher headquarters by means of a directive. The directive prescribes a general pattern of organization structures and functions to be followed. The Manpower and Organization Office is the primary staff agency responsible for insuring the implementation of the directive. The procedures which we followed in developing the reorganization entailed the following steps.

### 1. Preliminary Planning and Background Development

A thorough study is made of the directive by reviewing the contents in connection with current regulations and technical references essential to the reorganization. A master organization chart is drafted, based on research and interpretations of the directive. The chart merely shows the structural placement of functions, i.e., boxes with organizational titles only. An oral briefing is given to the Commander on the reorganization, showing him the master chart and explaining to him our interpretations based on our research.

The next step is to reproduce sufficient copies of the directive for distribution to our unit commanders, staff officers and other key personnel. A letter of transmittal

is sent with the copies. The letter briefly asks them to review the directive and that a series of conferences would be scheduled for the purpose of obtaining their interpretations.

### 2. Collection of Data

A schedule is drafted as to the time and date of the conferences to be held with the person concerned. A letter of transmittal accompanies the schedule. The letter briefly explains the purpose of the conference. Mention should be made that the schedule calls for conferences with heads of major organizations and their key personnel.

The conferences highlight the fact that we are seeking to obtain coordinated interpretations as to the reorganization. As representatives from each activity are present, we explain our interpretations of the directive; the overall reorganization in terms of changes of existing functions; and the placement of their respective organizations as shown on the master chart.

Various opinions are usually expressed by the conferees at these conferences. We ask them to submit to us (1) an organization chart showing how they propose to establish their respective activities in accordance with the reorganization and our coordinated interpretations; (2) a statement of functions for each activity they propose to establish. The organizational data is to be submitted to us within thirty calendar days. We also emphasize that during this period they were to call upon us for any assistance they desire.

### 3. Interpretation and Analysis of Data

As each component submits its respective organizational data, we review the information against the directive; applicable regulations and other publications covering

these areas; and in accordance with sound management principles. Upon such evaluation, we redraft their organizational charts and functional statements in as many copies as are required to insure adequate distribution to all persons concerned.

We then establish a schedule for another series of conferences with all persons concerned. A letter of transmittal is forwarded along with the schedule, which briefly explains the purpose for the conference. At these conferences we distribute copies of the organizational charts and functional statements which we modified and/or changed as a result of our research and analysis. We explain to the conferees the reasons for the modifications and changes. The point is stressed that the reorganization is a continuing job, and that it is only the first step in implementing the directive. We emphasize that the changes will be made on a service-test basis for six months at which time we will conduct a series of organization surveys to evaluate the effectiveness of the reorganization. If at any time during this period difficulties were encountered, they were to submit them to us for analysis and resolution. In light of this, differences of opinions are resolved at these conferences and final coordination is achieved concerning the implementation of the directive.

### 4. Development of Data

The modified organizational data, together with further changes, as made at the conferences, are incorporated in a series of organizational charts which show organizational titles and functional statements for each box. These charts are submitted to the Commander for final approval. All of the necessary coordination is effected and he has only to accept or reject the recommended structural placement

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of activities and their attendant functions.

The series of charts are then assembled together in rough draft, and put into an organization and functions chartbook. The chartbook is forwarded to higher headquarters for approval.

### 5. Summary

It must always be remembered that reorganizations will occur frequently for organizations are never static. Organizations are moving, fluid forces which cannot stand still. They are groups of people working toward a common end—a mission. As people change so do organizations. The former establishes policies which affect changes in organizations. These changes cannot help but affect all persons concerned, and any reorganization must take into consideration the

views of the people involved. To forestall any "half-cocked" ideas and to enlist the support of all persons concerned in order to effectively implement a reorganization, it is highly desirable that a systematic approach be used. In short, sound human relations generated by proper and competent staff assistance will more than pave the

### Workers Receive \$6 Million for Suggestions

Washington—Civil Service workers collected close to \$6 million for their suggestions and special services last fiscal year and saved the government about \$102 million in taxes, Civil Service reported this week.

Commissioner George M. Moore termed the incentives awards program the "biggest bargain in his-

way towards an effective reorganization, with a minimum of confusion and ulcerated frustration resulting from human resistance to change. We must bear in mind that a reorganization is not a means to an end. We must also remember that management principles are effective if we know *when* and *how* to apply them in given situations.

tory," in a talk prepared for delivery to the National Federation of Federal Employees national convention at Louisville, Ky.

The first-year savings for the ideas figure out to about \$1000 per award and some will continue to save for years.

The civilian award plan covers all civil servants including those working for the services.

Military members are not eligible.

### Sergeant's Ranks Shuffled, Marine Corps Flips

Perhaps it was just the heat, but mention of the name "Welker" produced the strangest reaction at the Cherry Point, N. C., Marine Corps Air Station last Tuesday when a reporter asked to see him at the office of Marine Fighter Squadron 312.

Spontaneously everyone went berserk. The clerks climbed on top of the file cabinets and dove off; the sergeant major viciously butted his head against the wall; the adjutant stopped cutting paper dolls and flung himself through the window. Then, peeking in the door of the commanding officer's office, the reporter heard him muttering the Oath of Allegiance over and over, while the executive officer counted his marbles.

Determined to get to the bottom of this strange behavior and discover what was driving an otherwise perfectly normal, healthy group of Marines haywire, the reporter backed out and left the office.

Hunting around outside the reporter found a pilot who had just landed and was unaware of the confusion in the squadron office. This flyer said he was acquainted with George J. Welker and had nothing but nice things to say of him.

Calmly the pilot related the story of Welker which was later verified by the exhausted, harassed sergeant major. As near as possible, it went like this:

Last weekend, 1st Lt. George J. Welker was just THAT: a first lieutenant (temporary appointment). Also, he was a squadron pilot and training and gunnery officer for the Checkerboard Squadron.

Monday morning a batch of mail came in from Washington and not just a little of it referred to Welker. The first letter stripped him of his lone silver bar, and the next said he was to be known as a master sergeant. So, he put on his chevrons, got an enlisted man's liberty card and went home.

Tuesday (by then more mail had been opened) MSgt. Welker was discharged as an enlisted man. Then the bars of a chief warrant officer, W-2, were pinned on him. But only theoretically, because that was merely to be his permanent rank for administrative purposes. He was selected for re-appointment to first lieutenant, temporary appointment. That was effected, but the next piece of correspondence said that Lt. Welker was promoted to captain. So that did it—he held four ranks in one day!

Before taking Welker into the commanding officer's office for a

picture, the sergeant major said, "Are you ready to go in, sergeant, lieutenant, Mr. Welker, captain?"

Welker nodded, shifted an assortment of rank insignia from one hand to the other and strode in, his pockets bulging with various grades of chevrons, warrants and commissions.

When the Marines chose Capt. Welker for the confusing rank shuffle, they were not getting a novice. Briefly his military history reads: Completed flight training and won his Wings in September, 1945 (which he began as a private first class); commissioned a second lieutenant in January, 1946; reverted to master sergeant, April, 1947; reverted to technical sergeant May, 1951; commissioned a second lieutenant, October, 1952, and promoted to first lieutenant, April, 1954.

As a technical sergeant, flying jet-fighter aircraft in Korea with Marine Fighter Squadron 323, Capt. Welker chalked up 93 combat missions during 1950-1951. For his services there, he was awarded three Distinguished Flying Crosses and seven Air Medals.

A native Pennsylvania, Capt. Welker first entered the Marine Corps in October, 1942. He now has nearly 4,000 flight hours of which about 1,200 were logged in jet aircraft.



## Management Tools

(Continued from page 25)

In view of the great uncertainties inherent in R & D decisions, usually more than one weapon should be developed, even though several of the weapons developed may never be procured. This is one, and possibly the best, way to "hedge" against the tremendous uncertainties involved in R & D decision making.

The preceding discussion of decision making in the R & D area is all too brief, but it does serve to indicate in a broad sense that in view of the nature of the decisions to be made, financial management cannot be a major tool in this area. There may be a subsidiary role, however. For example, experience at the RAND Corporation has indicated that statistical analysis of Air Force accounting data may yield useful cost factors and estimating equations to be used in computing system cost inputs for systems analyses. Accounting data could conceivably be even more useful for this purpose if the Air Force accounting system were oriented more toward accounting for the cost of mission (end product) activities rather than toward accounting for "functions" crossing mission boundaries.

### The Procurement Area

The decisions involved in the procurement area are somewhat similar to R & D, but with some exceptions. First of all we must distinguish sharply between decisions relating to procurement of major equipment items and those relating to "routine" procurement of supplies. In the former case the situation is somewhat analogous to the R & D area and again systems analysis is the most probable major tool. The fundamental problem for decision in the procurement realm is that of choosing "the best" from among the menu of alternative weapons that have been developed to perform a certain military mission. Again, this is a problem of choosing among alternatives under conditions of interdependence and uncertainty; and again systems analysis seems to be the appropriate tool.

In making decisions regarding

routine procurement of supplies, etc., financial management tools may be useful. For example, monetary inventory accounting data may be used to help reach procurement decisions on requirements for stocklevels of supplies to support a program. This is particularly true when monetary inventory accounting information is used in conjunction with consumption rate data.

### A Note on Budgeting

Before turning to operational decisions, a word about *budgeting* in relation to R & D and procurement decisions is in order. There is an interesting and somewhat complicated interaction here. Clearly R & D and procurement decisions have a tremendous impact on the military budget—especially procurement decisions. But there are forces operating in the opposite direction, too. R & D

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and procurement decisions (particularly the latter) must be made in the light of budgetary *limitations*, the major responsibility for which stems from authority outside the military. In other words budgetary considerations *reflect* R & D and procurement decisions, but at the same time *constrain* these decisions. Basically these budgetary constraints originate from the nation's gross national product, and from how much of GNP it is deemed feasible (politically, economically, etc.) to allocate to military activities.

In dealing with this interaction between decisions and budgetary constraints, it is important to have a budget structure that will facilitate tracing out these interrelations. Many people, including the present authors, feel that the present budget structure does not enable

one to grasp readily the budgetary implications of developing and procuring a new weapon system, or more important, of developing and procuring one weapon system *vis-à-vis* alternative systems. In order to make the budget more meaningful, it has been suggested that a new budget structure be developed which would have the following major features:<sup>\*</sup> (1) Distinguish between "capital" and "operating" outlays; (2) Give explicit treatment of time phasing the outlays by fiscal year; (3) Relate the budgeted outlays to the basic mission (end products) of the military, rather than to "functions" or "projects" cutting across mission boundaries as is done at present. Undoubtedly such a budget structure would aid materially in dealing with problems of interaction between decisions and budgetary considerations. We shall return to the subject of budget structure in the discussion on operations decisions.

### Operations Decisions

Let us turn now to operations decisions, i.e., decisions on how to use forces *in being*. Here *operations research* is clearly relevant, since by definition operations research means making an analysis to determine how best to use resources on hand to accomplish specified tasks or objectives. Linear programming, activity analysis, and process analysis, or variants thereof, are some of the specific techniques that may be used to solve operations research problems.

Financial management may play a significant role as an aid in making operational decisions. At least it is potentially more useful here than in the R & D and procurement decision areas, particularly if used judiciously in conjunction with other management tools: operations research, statistical analysis, work measurement, standard cost schemes, industrial engineering techniques, etc.

*Budgeting*, for example, may be

<sup>\*</sup>E.g., see David Novick, *Efficiency and Economy in Government Through New Budgeting and Accounting Procedures*, RAND Corporation report R-254, February 1, 1954, Chapter 4; and Arthur Smithies, *The Budgetary Process in the United States*, New York: McGraw-Hill Book Company, 1955, pp. 265-277.

a potentially useful management control device. But for this to be so the basic orientation of the budget structure must be changed from "control of funds" (which is the case now) to an emphasis on "management control." This merely means that the budget should in fact be what is usually understood by the term "budget"; i.e., a "budget" simply represents a translation of a mission program (in physical terms) into dollar amounts. Or stated another way, a budget traces out the dollar cost implications—preferably on a time-phased basis with a distinction between capital and operating outlays—of a mission program.

It is true, of course, that the present military budget is in some sense a dollar translation of a program. But one would never guess this from looking at the budget. It is not possible from the budget document itself to relate explicitly the budget to, say, an Air Force combat wing program, an Army combat division program, etc. If, however, the budget structure were changed to conform to the concept of a budget as stated above, then it would be possible to go through the complete sequence of *programming, budgeting, and finally accounting*. Accounting information would reflect actual costs of the program which could then be compared with the budget (estimated cost of the program).

This latter thought implies that budgeting and accounting should be interdependent and that therefore they should be set up in terms of the same general format—something which is not in general true at present. We should be careful, however, not to attribute too much to the process of comparing accounting results with the budget. All this does is indicate how the cost of actual operations compares with the estimated cost of a program (the budget). It does not necessarily show whether the operation is an "efficient" one, unless the program itself was determined in some sense to have been an "optimal" one.

Along this same line of thought, we must take care not to attribute more to the budget than is appropriate. An example of this mistake is the following quotation from a

discussion on cost budgeting in one of the Cooper Committee reports: "The primary purpose is to accomplish given objectives at minimum cost within the total resources authorized for the program and not merely to control funds." Here we have an example of a confusion between budgeting and operations research. Budgeting *per se* cannot enable us to determine an "optimal program." This requires the combined use of operations research and budgeting.

Before turning to a discussion of accounting as an aid in making operations decisions, another interrelation between budgeting and accounting should be emphasized. If the accounting and budgeting structures are set up in terms of the same general format, then accounting data, and particularly *statistical analysis* of accounting data, may be very useful as an aid in costing out future programs—i.e., in developing budgets. For this technique to be used to most advantage, statistical analysis must be stressed, and full use must be made of other types of information (activity rate data, work measurement data, number of personnel, etc.) in conjunction with the accounting data. Through such a process, useful cost factors, estimating equations, and other devices may be developed. Here again the important thing is to use all available tools to tackle the problem. Accounting data in and of itself is apt not to be very useful.

Turning now to *accounting* as an aid in making operations decisions, we have a situation similar to that in budgeting. If accounting is to be useful in a management control sense, the first requirement is to shift the emphasis from a purely fiduciary orientation to one of management control. The government for years has done a good job of accounting in the fiduciary sense, but only recently has it begun to think of accounting in terms of aid to management decisions.

In considering accounting for the military forces as an aid to management in the operations decision-making area, several factors are fundamental. First of all the fact

\*Financial Management in the Department of Defense, p. 25.

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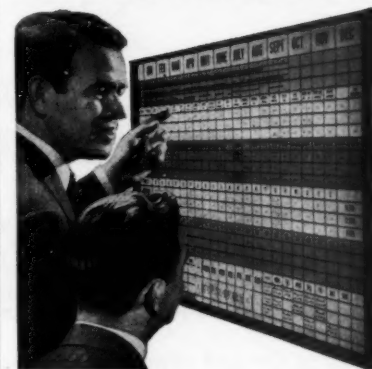
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that military activities are different from those of private industry must be continually kept in mind. For example: (1) The product in most types of military operations is difficult to define; (2) Concepts of "efficiency" of operations are hard to come by; (3) In the armed services there is no over-all measurement of efficiency (revenue minus cost equal profit) as in private industry; (4) With the important exception of the inventory accounts, the balance sheet is apt not to be as important in a military organization as in private industry; etc.

Secondly, it is important to try to keep the proper balance in emphasis in the accounting system used by the military. For example, except in special cases, *elaborate* accounting should probably not be used in areas where: (1) only a very small fraction of total costs are involved; (2) in view of military regulations, policies, and institu-

tional arrangements, local managers do not have much flexibility in decision making; and, (3) elaborate accounting is apt to be administratively infeasible (e.g., parts of the R & D area).

Finally, and possibly most important of all, to gain the most advantage from an accounting system, it must be used in conjunction with other management tools. This is particularly true in organizations like the armed forces where not even a general measure of "efficiency" (e.g., profit) is available. For example, an accounting report might tell the commander of an Air Force depot that the operating cost of his jet engine overhaul line for the month is X dollars. The commander's reaction is apt to be, and rightly so, "so what?" To make the X dollar figure meaningful some basis for comparison, or some criterion, must be available; also "output" must be taken into account. The commander might com-

pare his costs with those of other depots; but this can be dangerous if carried too far, since operations throughout the depot chain are not homogeneous. Where feasible, it is preferable to attempt to set standards within the depot itself and compare accounting results with the depot's own standard. This would be an example of industrial engineering techniques used in conjunction with accounting. In addition the budget, if set up differently than it now is in the military services, might provide a basis for comparison in the sense that the actual cost of operations could be compared with the estimated cost of the program.

In any event, some basis of comparison must be available if accounting results are to contribute significantly to management control. To attain such a contribution, other management tools must be used to supplement the accounting information. The Cooper Committee document on financial management has an excellent statement of this at the beginning of the report,\* but unfortunately the idea tends to be forgotten in the proposal itself.

#### Working Capital Funds

Although enthusiasm for working capital funds in the Department of Defense has been high in recent years, a wide difference of opinion still exists regarding how useful these funds might be as a management control device.

On the one hand we have the Cooper Committee position as stated in its report on financial management:\*\*

... However, the use of a revolving fund as a device in lieu of an integrated accounting system, or to overcome organizational complexities or because of the unwillingness otherwise to delegate authority commensurate with assignments of responsibility is

\*"Maximum effectiveness of financial management is achieved only when it is fully integrated into total management and is tied in with other aspects of management, such as effective manpower utilization, full utilization of industrial engineering techniques, and vigorous inventory management through modern merchandising methods where applicable." *Financial Management in the Department of Defense*, October 1954, page 8.

\*\**Ibid.*, p. 33.

### KING SIZE WING



Here is the first photo of Lockheed's new Model 1649A Super Constellation with a record-length, 150-foot wing as it is towed out of the final assembly hangar. Wing's extreme length necessitates placement of several men to check clearance of wingtips as the giant plane is maneuvered into position. The airplane, by next April, will begin intercontinental airline service. The huge wing, 27 feet longer than previous Super Constellations, holds fuel for nonstop flights of about 6300 miles without consuming reserves, making possible

nonstop runs from San Francisco to London, New York to Rome, or Rio de Janeiro to New York. The traditional Constellation dolphin-shaped fuselage and triple tail are retained. Extra-large, three-bladed propellers measure 16 feet, 10 inches and turn at slow speed, thereby absorbing optimum power of the airplane's 3400 h.p. engines while holding cabin noise level to a comfortable minimum. In this view, the new airplane is seen from under the wing and wingtip gas tank of a conventional Super Constellation radar plane. AL-8789



highly questionable and under these circumstances the situation can best be remedied by attacking the basic problems involved.

The opposite position is represented by the following statement contained in a document on financial management put out by the Office of Assistant Secretary of Defense (Comptroller)\*:

Working-capital funds have not been utilized as extensively as they should be, nor is there a uniform, complete understanding throughout the Department of Defense of their advantages. The use of stock funds is being too narrowly applied; their use *should extend to the installation level* and encompass all items of consumable materiel, including spare parts, components of equipment, and minor equipment, which should be charged when withdrawn for use as elements of costs of the consuming activities. Similarly, industrial funds should be utilized generally for financing such industrial- or commercial-type activities (service-type or support activities) as major repair and overhaul activities and Military Sea Transportation Service and Military Air Transport Service. (Italics added.)

The report also says:\*\*

Working capital funds are the most practical, presently available device to stimulate improved management with respect to the requirements of activities ordering common services and material, as well as with respect to the operations of the producing or supplying activities. The buyer-seller relationship (even under some limitations in such relationship) stimulates greater cost-consciousness on the part of the buyers. Better utilization of service-type facilities by other departments is also encouraged. Stronger central supply management of inventories is greatly facilitated by the use of stock funds—a most important consideration.

The present authors know of no rigorous argument indicating that

working capital funds would in fact produce the panacea implied in the latter two quotations above. To get to the heart of the matter we have to consider motivations inherent in the working capital fund arrangement and then try to see whether these motivations tend to stimulate the economics in use of resources that the proponents suggest. According to Mr. McNeil the answer is quite simple:

... This is comparable to organizing a Sears, Roebuck or Montgomery Ward, in which case the inventory is capitalized and with enough cash on hand to run the business. That, in effect, is a stock fund principle.

This means, then, and starting to try to answer more specifically your question, that nothing can be removed from the shelf for use unless the user has the money in a current appropriation to pay for it, and that is one of the key points for control and economy.\*

Thus, apparently if the "seller" has his inventory and sufficient cash to run the business, and if the buyer has to use his "own money" to pay for the supplies, there will be a "buyer-seller" relationship of such a nature that "control and

economy" will result. This may not necessarily be the outcome, however. The amount of stimulus to incentives depends upon the way in which working capital funds are implemented. In the first place the management of these enterprises will be anxious to have favorable "profit and loss" statements if (a) their superiors are anxious that this be the case, or (b) their remuneration is directly related to profits. Otherwise, their incentives are not likely to be sharpened.

As far as the "customers" are concerned, they will be anxious to economize in their use of the enterprise's output if they must genuinely give up something in order to buy the output. But in order for this condition to be fulfilled, they must (a) not be able to "pad" their budgets, and (b) be able to get some gain or "credit" from the savings of resources. In sum, we cannot assume a one-to-one correspondence between the buyer-

—  
\*W. J. McNeil's testimony before a congressional committee. See *Federal Supply Management: Hearings Before a Sub-committee of the Committee on Expenditures in the Executive Department, House of Representatives*, June 24, 25, and July 1, 1952, p. 132.

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\**Financial Management in the Department of Defense*, Nov. 1954, p. 41.

\*\**Ibid.*, p. 40.

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seller relationship involved in a working capital fund arrangement and the buyer-seller relationship in private industry. In the former case the "buyer" (consuming unit or organization) is not under "market pressure" or the pressure of the "profit motive." True, he pays for his materiel and services out of his budget, but he may pad his budget, or he may sacrifice on the performance or output side of his operation, to the detriment of the defense program.

One authority sums it up this way:

Enthusiasm for the working-capital fund must not obscure the fact that the business environment is by no means completely reproduced. In particular, the prices charged to consuming agencies are usually based on cost to the fund and are therefore artificial. The selling agency is not really exposed to the test of a market. In fact, there have been instances where prices charged have been raised "in order to maintain the integrity of the fund." It would be possible in some instances to expose the selling agency to outside competition. The consuming agency could be allowed to purchase in the open market if it could do so more cheaply, though such instances are necessarily rare. To make the best use of the funds it is highly important that pricing standards be definitely fixed and adhered to, and, wherever possible, prices should be related to current market prices rather than to cost to the selling agency.

Although working capital funds are apt not to be a panacea, they may have some fairly important "side effects" which are probably not generally recognized. For example, if these funds were used fairly extensively in the military, they could conceivably be set up in such a way that they would automatically tend to help produce a true performance (mission) type of defense budget. Most authorities agree that such a budget reform is badly needed; but institutional pressures seem to prevent any significant progress toward this goal. Perhaps the only practical

\*Arthur Smithies, *The Budgeting Process in the United States*, p. 321.



### Weekend Warriors Receive Fisher Pens

You have probably heard of the U.S. Naval Air Reserve "Weekend Warriors". They are groups of Reserve officers and men who meet for a weekend of military flying once a month and two full weeks

of training once a year.

Such a group is Patrol Squadron 721 out of the Naval Air Station at Glenview, Illinois. Last August this squadron flew from its headquarters station to Port Lyautey in French North Africa and returned during its two weeks annual training... a total of over 21,000 miles.

To commemorate this event, Fisher Pen Co., of Forest Park, Illinois, manufacturers of the Fisher One-For-All ball point refills, had special pens made for distribution to all members of the squadron. Each pen was inscribed with a good luck message and was presented with an extra Fisher Refill.

The extra refills prompted a remark from Commander Harold Sumi, skipper of VP-721 and seen in the photograph accepting them from June Fisher. Aware that Fisher Refills are guaranteed to write one mile, he was sure that during this flight "half way around the world". Ed Hoffman (center, crew chief on the Commander's plane, smiles in appreciation of the remark, the souvenir pens, and June Fisher.

solution at this time is to try to attain the result indirectly through working capital fund arrangements.

### Summary and Concluding Remarks

One way to look at the over-all management problem in the military departments of the government is in terms of the decisions they are called upon to make and the procedures they have developed for making these decisions. From such a viewpoint the over-all management problem may be described as: making decisions about a wide variety of complicated, interdependent activities, and making these decisions under conditions of extreme uncertainty.

The purpose of this paper has been to examine in a broad sense the basic types of military decision-making areas, and to try to relate to these areas the tools which might assist in making key management decisions. A wide range of types of management tools are available as aids to intuition and judgment in

making decisions. Some examples are: systems analysis, operations research, statistical analysis, financial management schemes, industrial engineering techniques, linear programming, etc.

The key problem involves the matching of management tools and decision-making areas in such a way that the tools selected for use in the various areas are the most appropriate ones. In this "matching process" it is important to consider the complete range of available management tools, and to realize that any one tool in and of itself may not be very useful in a given application, but when used in conjunction with other tools it may contribute greatly toward making better management decisions. Also it is vitally important to single out the most relevant areas of military decisions. The criterion for relevance should be the ultimate impact on the combat capability of the armed forces over time.

For purposes of discussion in this paper, three broad classes of military decisions were singled out:

(1) *Research and development decisions*: what equipment to develop so that at a future date (5-10 years hence) there will be a reasonably good menu of weapon system choices from which procurement decisions can be made.

(2) *Procurement decisions*: what equipment, men, etc., to buy.

(3) *Operations decisions*: how to deploy and use forces in being.

A wide range of types of management tools were then related to these important classes of decisions, with a view to finding out which tools are most appropriate as aids to decision-making in each of the three areas. In this matching process special consideration was given to the role of financial management (budgeting and accounting).

Broadly speaking, the conclusion is that financial management can probably make only minor contributions in the R & D and procurement areas of decision. In the realm of operations decisions, however, financial management has a potentially major role if it is used judiciously in conjunction with other types of management tools—particularly, operations research, statistical analysis, and industrial engineering techniques. As an aid to decision making in the R & D and procurement areas, systems analysis appears to be one of the most promising of the currently available management tools.

With regard to financial management as now generally practiced in the armed services, budgeting is perhaps the weakest element in the program. In order for the budget to assume a key management control role in the military forces—as opposed to its present “control of funds” role—a major overhaul of the budget structure seems necessary. It would appear, for example, that the following budget reform measures should be seriously considered: (1) distinction between capital outlays and annual operating costs; (2) explicit treatment of time phasing the estimated outlays by fiscal year; and (3) development of the budget in terms of basic missions (“end products”) of the armed forces. Adoption of these measures might help considerably in tying in the budget to Army, Navy and Air Force combat pro-

grams on the one hand, and to military services accounting on the other. Budgeting would then begin to assume its key role in the chain sequence: program, budget, and finally, accounting. This sort of integration is necessary if the budget is to be very useful as a management control device.

## Lockheed Gets AMC Propjet Contract

Award to Lockheed Aircraft's Georgia Division at Marietta of a new multimillion-dollar contract for manufacture of C-130 Hercules propjet transports was announced by General E. W. Rawlings, commander of the Air Materiel Command, Wright-Patterson Air Force Base, Dayton, Ohio.

“This is the fifth production contract awarded the Marietta plant by the Air Force for Hercules propjet airplanes,” said A. C. Kotchian, Lockheed vice president and Georgia Division general manager. “It covers another large quantity of these advanced, multi-purpose transports for delivery to the Air Force.”

Value of the award was estimated at well over \$100 million and General Manager Kotchian stated that a fixed price type contract would be negotiated with the Air Force.

Besides the additional large number of 62-ton propjets, the contract includes spare parts, ground handling equipment, engineering and technical data and mobile training units. The mobile units are used by the Air Force to train both flight and ground crews at C-130 bases.

Lockheed won the first C-130 Hercules contract in July, 1951, for two prototype airplanes—the first propjets designed in America. These were built for the USAF by Lockheed in California.

## Army Test Center To Be Established At Fort Ord

Establishment of an Army Combat Developments Test and Experiment Center at Fort Ord, California, was announced by the Department of the Army.

Work of the new Center is expected to begin by November 1.

Troops of the 10th Regimental Combat Team of the 5th Infantry Division, stationed at Fort Ord, will be used in the combat testing with one or two battalions from the 10th RCT spending short periods of time in field work at nearby Camp Roberts and Hunter Liggett reservations. No change in the status of the three military installations is contemplated.

## 'Copter Retrieves Downed L-19 Plane

Ft. Bragg, N.C. (AFPS)—Two Army pilots here recently used their H-21 helicopter to retrieve a downed L-19 which had lain two days on a storm-lashed sand bar near Morehead City, N.C.

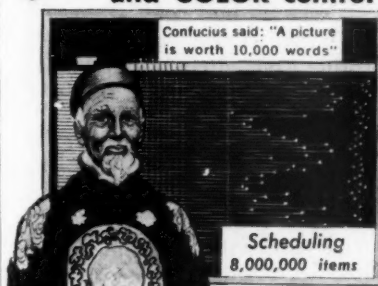
Sheets of rain, and winds higher than 40 knots, buffeted the helicopter as it pulled the light liaison plane from the surf and bore it to the Coast Guard base at Ft. Macon.

The pilot of the L-19 had escaped two days earlier, after making a crash-landing. Navy and Coast Guard attempts to recover the plane were unsuccessful.

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# Why is there an AFMA?

by Esther Boone Campbell

(Historian & Recording Secretary for the  
National Board of Directors)

The difficulties faced by management during the Korean Crisis and after documented the shortcomings of the formal channel as a vehicle for the interchange of solutions to management problems. Much success in management depends on getting to know the other guy. Here again, formal channels don't lend themselves to this purpose. On the other hand, the completely informal, happenstance approach is equally inadequate. Something in between to supplement formal channels was clearly needed. The formation of a management association to help meet this need was first discussed in April of 1952. Everyone agreed that, despite the existence of fine associations such as the American Society for Public Administration and the Society for the Advancement of Management, the scope and nature of the problems in the Department of Defense warranted attention.

By June of 1952, a special effort was made to organize a management association. Invitations were sent to many of the leading military and civilian employees who were identified with the management program of the Defense Establishment. It was originally intended that the association be a departmental group with members from Washington, D.C. and vicinity. In August, the interested persons contacted met again at Fort Myer, Virginia and voted to organize. This meeting was attended by representatives of the Department of Defense, the Department of the Army, the Department of the Navy, the Department of the Air Force and Headquarters U.S. Marine Corps.

It was further voted that, for the initial period, an executive steering committee would be responsible for the administration of the Association.

This Committee prepared a Constitution and presented this and a slate of officers to a later meeting of the charter group.

The Association's first Board of Directors, elected in June of 1953, was under the Chairmanship of Mr. James M. Mitchell, the then Deputy Assistant Secretary of Defense (Manpower & Personnel).

## Basic Policy Outlined

The first Board of Directors reaffirmed several of the tenets of basic policy advanced in the earliest days of the Association. These were that the Association would: cooperate in the interchange of highly specialized techniques and

knowledge required for the continuance of improved management methods; carry out studies and reports upon special subjects and problems of interest to the membership; and foster a spirit of good will among its members, perpetuating the friendships, memories, and traditions growing out of service together with the Armed Forces. It was also determined that membership would not be limited to specialists in management. Everyone interested in management and learning to be a better manager would be encouraged to join.

Early in the Association's growth it was decided that the term "Armed Forces" would include the Department of Defense, the U.S. Coast Guard, the Military Exchange Activities, the Reserve Components, and the personnel of the National Guard of the United States. Here again, the desire to encourage widespread participation was shown. Since then several chapters have pointed to the desirability of permitting employees of firms holding defense contracts to join. At many installations there are thousands of such employees who are, for all intents, employees of the Department of Defense.

One point of interest was the selection of a name for the Association. The first official name was the Armed Forces Management Technician's Association. The word "technician" was included because of the apprehension, expressed in several circles, that the Association might be used as a pressure group to obtain special privileges for the

managers. The word "technician" stressed the technical aspect of the Association's objectives. There was considerable dissatisfaction expressed by the members and the title was later changed to its present form.

To list here all the members who gave generously of their time and through whose skills and talents the Association grew to its present stature would require reproduction of each of the minutes of General Meetings, Divisional Panel Meetings, and meetings of the Board of Directors.

From the beginning, the Board of Directors followed a conservative course regarding the organizational structure of AFMA. Simplicity in organization, methods, and companion administration was considered essential to achieve the best use of the individual contributions of time and energies to the Association in its formative period. Formalized organization and procedures are essential to a large organization. In a small one, with volunteer help they are a luxury that cannot normally be afforded. AFMA was no exception.

In 1952 and in 1953, AFMA received several requests for official chapter recognition outside the Washington area. At first the Board of Directors advised these petitioners to form their own groups separately and for all to affiliate in their common purpose. In December 1953 the Board agreed to recognize other chapters and the first Field Chapter of the Association was established officially at Baltimore, Maryland.

Today the standing committees of the Association are almost unchanged from their original format. These include a Committee on Finance, a Committee on Membership, a Committee on Publications, a Committee on Programs and a Committee for Publicity. Special committees have been appointed, and some continue as standing committees — the Committee on Constitution & Bylaws, the Committees on Nominations (there have been four), and the Committee on Organization.

By June 1955 the rapid increase in membership and particularly in field chapter activity made evident the need for centralized administration to handle the increased requirement for expeditious handling of correspondence, historical material, submissions of management studies and papers for publication and other functions incident to the management of the Association's business. This necessitated centralized control of all the Association's committee groups and administrative activities.

The Second annual conference was held at Fort Myer, Virginia on 24 May 1956.

By September 1956 the Association had grown to 23 active field chapters.

The growth in the number of field chapters changed the entire concept of and approach to the management of the Association. In recognition of this change the National Board of Directors voted to establish a separate Washington National Chapter. Prior to that, the National officers had also served as officers of the Washington chapter. This proved to be an unwieldy arrangement and the two were divorced. This freed the National Board of operating responsibility for the National Chapter and permitted more time for consideration of policy matters.

The current program of the Board also reflects the change in the nature of the Association. The Third Annual Conference, in conformity with the vote of the members at the Second Annual Conference will be two days instead of one. The first day will be devoted to chapter business and programs. The second to the more formal presentations of new management concepts.

New membership criteria are being developed to provide a stronger membership base. This should prove helpful in the membership drive underway.

The Board has recently set in motion a program to improve the materials furnished those desiring to establish a field chapter. In addition a packet of materials on how to develop a chapter program is being prepared, and from time to time suggested program materials will be distributed. It is hoped that the chapters themselves will contribute material on their own successful programs which can be distributed to others. Under the leadership of Mr. Matthew McKeon, Office of the Comptroller of the Army, an Association Speaker's Bureau has been established through

which outstanding speakers from the Defense establishment and industry are identified so as to make their services available to the field chapters.

The Association has passed through the pains of birth and the transition from a predominantly individual to a chapter pattern of growth. The aim now is to build on this foundation. The role of the National Office will be to furnish help and guidance, by and with the support of the chapters and members at large. As time passes, it is the intent to have the Association identify itself more and more closely with the management objectives of the Department of Defense. By so doing it can serve to help give the Nation a more effective and efficient fighting arm.

### BuAer R&D Reorganizes for Better Weapon Systems Approach

The Navy announced a reorganization of the Research and Development Department of the Bureau of Aeronautics designed to

improve its ability to carry out an integrated "weapon system" approach in the development of new air weapons.

The new arrangement, the Navy said, "will place greater emphasis on the research and development planning phases, strengthen project management for air weapon systems and provide more efficiency and economy through centralization."

The principal change in BuAer's R&D Department is the formation of a new Avionics Division to be headed by Capt. W. E. Sweeney, USN. Consisting of the old Electronics and Armaments Divisions, plus the Navigation Branch of the Airborne Equipment Division, the new unit will have control over the obligation of \$50 million in funds during the current fiscal year.

The Avionics Division will be responsible for all electronics gear for both aircraft and missiles used in locating targets, maneuvering for attack and delivery of weapons.

Fort Richardson, Alaska's largest and most modern Army installation and headquarters for the United States Army, Alaska, is approximately eight miles from Anchorage, the Territory's largest city. Temperatures vary from a high of 85 degrees to 45 degrees below zero.



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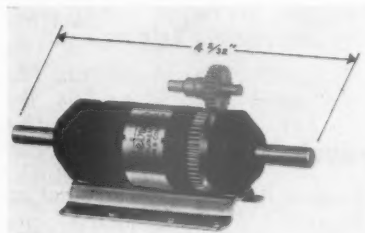
Write today to Chairman, Membership Committee, Armed Forces Management Assn., 1635 North Woodstock, Arlington 7, Va., for information. Become proficient in our

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# NEW Dollar-Saving Products

## MINIATURE DIFFERENTIAL

*Metron Instrument Company.* (See Cut) These new Miniature Differentials are now available from Metron for applications where small size and long life are essential. Installation is easy because they have ball-bearing shaft supports that are foot mounted. These



differentials will add or subtract two rotating inputs . . . or angular inputs. Thirty-four ratios—from 1:1 to 27:1—provide wide design possibilities. Units with anti-backlash features are also available. May we send you more complete information without cost from our library?

*For more facts request No. 1 on reply card*

## NEW INDUSTRIAL TRACTORS

*John Deere Corporation.* A new time-saving feature for Industrial Tractors has been recently announced by John Deere. A direction reverser that permits forward or backward travel at the same speed without shifting gears is the

highlight of several new features for the "420" Crawler and Utility Tractors. A 5-speed transmission is offered for all models of Industrial Tractors, and a new heavy-duty 3-point hitch for the "420" combines the advantages of "pick up and go" operation.

*For more facts request No. 2 on reply card*

## WELDING ENCYCLOPAEDIA

*All-State Welding Alloys Company.* A new manual—52 pages, 4 x 7"—is a handy pocket encyclopaedia of practical welding know-how needed by operating personnel particularly in maintenance departments and welding shops where the variety of metal work is non-routine. The manual was written by expert welders to provide a ready reference for themselves and supervisory personnel. A copy is available for interested organizations without cost or obligation.

*For more facts request No. 3 on reply card*

## MILITARY TIES

*A. Schreter & Sons.* The latest in military men's tie fashions have recently been announced by this time-honored tie manufacturer. Available now in most Exchange Stores.

*For more facts request No. 4 on reply card*

## "PRINCE CONSORT"

*Button-down and "DEAU-*

*VILLE" clip-down ties.* Available in all regulation shades, the new button-down tie is fast becoming a popular item with military men. Should these ties not be available in your exchange, circle the product card, and we shall be glad to assist you in securing them.

*For more facts request No. 5 on reply card*

## NEW LIGHTWEIGHT MASONRY PANEL

*Tecfab Incorporated.* A new lightweight panel consisting of a corrugated steel core embedded in precast perlite concrete, offers a new low-cost type of construction. Maintenance-free and easily constructed, an interesting brochure is available to construction personnel without obligation.

*For more facts request No. 6 on reply card*

## INVESTMENT BOOKLET

*Harris, Upham & Company.* Are you interested in investing now to augment your present or retired income? Two new and informative investment aids directed toward a sensible and conservative approach to investing in common stock, are being offered to you without obligation of any kind. Entitled "Dividends Over the Years" and "Market Review", these two booklets will materially assist your program. May we send them to you today?

*For more facts request No. 7 on reply card*

## TIME RECORDER

*Latham Time Recorder Company.* Specifically designed to bring the time-clock to the operation, this new low-cost clock will save its cost in a few days. How many organizations are using the old-fashioned system of having work crews punch in at a master clock, then waiting for transportation or other delays prior to beginning work? Portal to portal pay is recognized by better management as a tool of waste and inefficiency. The Latham Company has an interesting brochure available without cost, that will show you how their lifetime guaranteed clock can save you many dollars and increase production time.

*For more facts request No. 8 on reply card*

## BENDIX-DECCA NAVIGATOR SYSTEM

*Bendix Pacific Division, Bendix Aviation Corporation.* ARMED FORCES MANAGEMENT has in-

ARMED FORCES MANAGEMENT



deed been honored to announce that a limited number of an interesting brochure on the Bendix-Decca Navigation System, is available to pilots and navigators in the Armed Forces. This costly 18-page booklet will be of paramount interest to flying personnel. Your copy will be forwarded without cost upon receipt of your request on our product card.

For more facts request No. 9 on reply card

#### BROADCAST RECEIVER AND AUTOMATIC AIR-RAID ALERT SYSTEM

*Allen B. DuMont Laboratories.*  
A new low-cost AM radio receiver, which by the "flick-of-a-switch," becomes an automatic warning device in case of an enemy air attack, has recently been announced and priced at only \$40. Its dual function as an ordinary broadcast receiver and automatic air-raid alert system makes the receiver ideally applicable for all transmitter operations which will be required by January 2, 1957, to provide facilities for receiving CONELRAD alerts, and for banks, schools, theaters, hotels, military installations, and other public gathering places as an advance warning system of an impending enemy attack. More detailed information is available through our library service.

For more facts request No. 10 on reply card

#### NEW CRAWLER FORK LIFT

*American Tractor Corporation.* A new 12-page booklet offered by American Tractor Corporation contains helpful suggestions on mechanized handling of construction materials and other commodities. Truly an all-purpose piece of equipment, the TERRATRAC described has a capacity of 3500 pounds with a maximum lift of 21' 4". It is available with interchangeable dozer blade,  $\frac{3}{4}$ -yard loading bucket, concrete hopper bucket and log-grab, for handling a wide range of lifting, loading and leveling jobs. Free copies of the booklet may be obtained from ARMED FORCES MANAGEMENT.

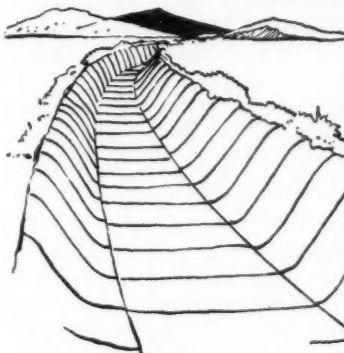
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#### PLASTIC HULL LANDING CRAFT

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- MILITARY INSTALLATIONS

"Hydromat" hydraulic mats, developed and manufactured by the leading manufacturer of asphaltic products for over 30 years, were developed in a scientific manner to provide a lining material that would allow the COMPLETE containment of water, wastes, sludges, sewerage, etc. "Hydromat" is installed as a monolithic liner, with mechanically sealed joints, that will expand and contract with soil movements without rupturing or

breaking the seal. "Hydromat", a fully exposed type of lining, may be installed quickly and easily by untrained labor . . . make-ready requires only a minimum of time and effort. "Hydromat" provides the practical answer to the problem of efficiently relining old, cracked concrete or gunite linings. "Hydromat" hydraulic mats are produced in sheet sizes 4' wide up to 12' long . . . available in thicknesses of  $\frac{5}{32}$ ",  $\frac{1}{4}$ " and  $\frac{1}{2}$ ".



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For more facts request No. 20 on reply card

other step in the advance of the plastics industry occurred recently when the Zenith Plastics Company launched the first of a fleet of 25 all-plastic hull landing craft (LCVP) for the Navy. The Navy has been interested for the past two years in development of a reinforced plastic landing craft and has fostered research and development projects toward this goal. Completely resistant to fungus, corrosion and dry rot, the results of exposure to dampness and salt water, the use of the new plastic process will save the government considerable sums of money. More detailed and technical information is available to interested individuals and government agencies.

For more facts request No. 12 on reply card

## ELECTRONICS FACTS HANDBOOK

*American Machine & Foundry Company.* A handy 20-page booklet entitled *Electronic Facts Handbook* has just been published by the Electronics Engineering Section of AMF's General Engineering Labo-

ratories. The pocket-size, attractively styled handbook is a collection of carefully selected reference data useful to people concerned with government and industrial research and development activities. Typical among the many subjects covered are Army and Navy synchros, AN nomenclature for communication equipment, radar terms, frequency bands and wavelength, analog and digital computers, and conversion of wind pressures to pressures. A free copy of the valuable little booklet is available through AMED FORCES MANAGEMENT.

For more facts request No. 13 on reply card

## NEW POCKET PAGER

*The Transvox Corporation.* The Pocket Pager, manufactured by Transvox Corporation, the smallest and lightest transistor-equipped device of its kind (less than 3 ounces—smaller than a regular-length package of cigarettes), is designed to eliminate the loudspeakers and bells now used for personnel paging. Using the Pocket Pager System,

shots, the dual factors of split-second employment of equipment and continuous adequate camera support are vital. The special problem of getting sharp unblurred shots from a moving vehicle and then making a quick changeover to a hand held or stationary ground mount requires three components:

the switchboard operator talks into a conventional microphone. The "pagee" receives a coded signal on his minature "button-hole" speaker. The tiny speaker may be clipped to a shirt pocket, blouse, or even under a tie. An improved transistor circuit permits battery life up to 600 hours without replacement. Low in cost, this new product appears to be a "natural" for commanding officers and executive personnel. Complete information is available without obligation.

For more facts request No. 14 on reply card

## MOBILE STORAGE

*Dolin Metal Products Company.* Visitors at the 1956 National Office Management Exposition, had the opportunity of viewing and operating the much discussed Dolin Mobile Storage System. This British Patented technique increases the amount of useable floor space by converting the large percentage of storage area aisle space into useful productive area. The mobile storage arrangement makes possible 6, 7, 8 and more rows of equipment

(1) A specially designed vehicle-mounted camera stand (2) a pan-head combining steady on-mount action, and (3) a tripod which will accept the pan-head assembly from the vehicle. Complete information and detailed descriptions are available without obligation.

For more facts request No. 15 on reply card

## CAMERA MOUNTING EQUIPMENT

*The Jewett Manufacturing Company.* (See cuts). For cameramen who must follow continuing action from a moving vehicle yet be prepared to instantly dismount and take hand held or ground mounted



with only one aisle. Details of this novel system together with graphic literature are waiting for your inquiry.

For more facts request No. 16 on reply card

### OSCILLATOR WAND

The Stancil-Hoffman Corporation. The new Oscillator Wand, Model A011 is completely transistorized and self contained maintenance tool for fixed and portable magnetic recording equipment. Guaranteed to thoroughly check a channel in a matter of seconds, the new wand has many times saved its low cost in maintenance costs. More detailed and technical information is available.

For more facts request No. 17 on reply card

### MINIATURE POTENTIOMETER

Minco Engineering & Manufacturing. A miniaturized linear travel potentiometer that provides a means of translating linear mechanical motion into electrical signals has been introduced by MINCO Engineering and Manufacturing, Minneapolis 1, Minn. The unit is

### REPRINT

"Management Can Understand Operations Research." Write Dr. C. A. Slocum, Operations Research Institute, Inc., 41 Fifth Avenue, New York, New York.

Operations Research Institute, Inc., offers reprints of an article entitled, "Management Can Understand Operations Research." Using the question and answer technique, the article gives a down-to-earth explanation of linear programming, one of the war-born analysis techniques which industry is now using to simplify and improve such operations as inventory control, production scheduling, sales forecasting, transportation scheduling, etc.

Typical questions answered in the article include: What problems can linear programming handle? What is linear programming like? What cost reductions or profits can be expected? How long does it take to get started? What basic information is needed? Where can training be obtained? etc.

A typical problem worked out in the article schedules the work of several machines of varying capacities in such a manner that a number of different parts are produced within a prescribed time limit. Only simple arithmetic is used.

For copies of the reprint, write to Operations Research Institute, Inc., 41 Fifth Ave., New York 3, N. Y.

designed to meet the requirements of control systems in aircraft, rockets, guided missiles and industrial machinery.

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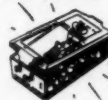
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4. Up to 6" active travel; 0.010" active travel tolerance; any specified value of over travel
5. Resolution as low as 0.0008"
6. Zero backlash

Further information on MINCO linear travel potentiometers, or special versions of it, can be had by requesting on the inclosed product card.

For more facts request No. 18 on reply card

#### SPRING-DEX CARD FILES

Wassell Organizations, Inc., Cut clerical costs in half on present records without expensive transfer. Revolutionize your present records. Make them visible, efficient, time and dollar saving. Spring-Dex is easy to install on any card in any housing.

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#### ASPHALT LINERS

W. R. Meadows, Inc. Sealtight Hydromat asphalt liners insure the complete containment of water, wastes, sludges and sewerage in industrial reservoirs and waste control ponds, military installations, irrigation projects. It's mechanically sealed joints will expand and contract with soil movements without rupturing or breaking the seal.

#### BRITANNICA Holds Workshop

A "Military Workshop" was arranged and held in August at the home offices of *ENCYCLOPAEDIA BRITANNICA* in Chicago for the TI & E offices of the various branches of the military establishments in the Chicago area, which was attended by 56 TI & E officers and non-commissioned personnel. *BRITANNICA* considered this a matter of public service in the interest of dispensing, without any obligation whatsoever, instructive and educational information regarding reference material and research.

Lasting a full workday basic editorial concepts in reference work-creation and related subjects were discussed. With J. V. Dodge, Managing Editor of *EB*, various department heads personally explained the various functions, and authenticity of the *BRITANNICA* as well as the thoroughness of the editorial staff. Original contributions and their processing through some 472 individual editorial steps were shown as well as the identical processing of supplementary material, contained eventually in the "Yearbook".

#### SHOULD

Armed Forces Management print a "Management Personnel Position Vacancy Column?" In reply to several inquiries, such a column is being evaluated for its value to you, the readers. An announcement will appear in the next issue. If you'd like to register your opinion, please write our editorial office, 208 S. Second St., Rockford, Ill.

Available in the sheet size to fit your construction plan best.

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#### QUALITY FASTENERS

Rockford Screw Products Co. A famous name offers the complete line of quality fasteners, screws, studs, pins, and bolts to fit any need plus engineering experience for specials of all configurations.

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#### CORRES-FILE ORDER DESKS

Wassell Organization, Inc. These New Order Desks give finger tip control of all records. Cards and correspondence or orders can be mixed. All records instantly available.

For more facts request No. 22 on reply card

#### BELCO REPLACEMENT FAUCET STEMS

Miller Manufacturing Company. Leaking compression type faucets, lost water and excessive maintenance costs are gone forever with the installation of Belco ball bearing replacement stems, complete with bibb washers. The bibb washer is only under compression and is not subject to cutting or grinding action.

For more facts request No. 23 on reply card

#### MUTUAL INVESTMENT FUND FACTS

Brown, Madeira, and Company. This company, specializing in mutual investment funds, will send, without obligation, facts about conservative, middle-of-the-road, and aggressive types of investments and mutual funds.

For more facts request No. 24 on reply card

#### VISUAL CONTROL BOARD

Wassell Organization, Inc. Production not only schedules but automatically checks with time, line,

and color control, has low original and upkeep cost.

For more facts request No. 25 on reply card

#### COMMON STOCK INVESTMENT

Hamilton Management Corp. Through Hamilton Funds, Inc., a managed common stock investment fund, this firm offers lump sum or monthly investment plans to fit any budget. Interested persons can inquire without obligation. Firm recently declared another quarterly dividend.

For more facts request No. 26 on reply card

#### VISIBLE EQUIPMENT

Wassell Organization, Inc. There are 16 good reasons why you should be cutting costs and speeding efficiency with Sig-Na-Lok. In use in all branches of the government, it should be investigated before you buy anything less.

For more facts request No. 27 on reply card

#### VISUAL MANAGEMENT CONTROL

Graphic Systems. This New York firm invites men interested in efficient management to get things done with Boardmaster Visual control which gives a graphic picture of operations, spotlighted in color, saves time, money, and stops errors.

For more facts request No. 28 on reply card

#### SELF INDEXING CARD SYSTEM

Wassell Organization, Inc. First again by Wassell, Plas-ta-card Self-Guides are the boon of all tabulating folk. Self-Guides go through tabulating machines, no guides to remove or replace, makes tab cards as fast as the fastest card file.

For more facts request No. 29 on reply card

#### CHECKER WALL MOUNTED RACK

Vogel-Peterson Company. Hold more wraps in less space. Write for Bulletin CK455.

For more facts request No. 30 on reply card

#### FILING CABINETS

Wassell Organizations, Inc. Cut your office force filing time in half, save up to 40% in space with Corres-File. Revolutionary filing equipment takes your file clerk out of the laboring class and saves you 50 cents of every dollar you now spend.

For more facts request No. 31 on reply card

# Optimum Personnel Utilization— The No. 1 Problem in Building Tomorrow's Navy

## Can the Navy Program Reduce Personnel Turnover?

**D**URING the fourteen years that I have been privileged to serve in the United States Navy my duty assignments have been concerned largely with *personnel* rather than with *materiel*. For that reason I think of management in terms of human resources and "good" management in terms of optimum utilization of every man and woman in military service.

All of us today are witnesses to advances in the science of naval warfare that are as spectacular and significant as were the developments in the historic days when the Navy changed from sail to steam. The Navy is now shifting from conventional power to nuclear power; from guns to guided missiles; from subsonic to supersonic aircraft. Consequently our Navy men and women must not keep pace only with scientific developments of this nuclear missile age but they must actually keep ahead of these modern advances if they are to have the training and know-how to handle the jobs which must be done in the Fleets and in the vastly complicated Shore Establishment. However remote from the bridges of our fighting ships or close to the roar of jet planes our personnel may be, each plays an important role in the vital task of keeping our Navy supreme on the seas. Our managerial responsibilities in the Navy, therefore, are pinpointed toward twin objectives—utilizing our human resources so that the potential of each officer and enlisted man or woman is developed to the fullest and harnessing technological advances so that we are always building the Navy of tomorrow—today.



**By Captain Louise K. Wilde,  
U.S. Navy**

*Assistant Chief of Naval Personnel for Women*

Since I am not qualified to discuss the technological aspects of management, my comments will be limited to the human side of the picture and the managerial problems peculiar to the military services.

Certainly personnel is the number one problem. Not only are all the services concerned about the problem of retaining trained people but they are perturbed about the effects of our large annual turnover of personnel on the combat readiness of our military forces. So important is this problem that the President, the Congress, and the civilian and military heads of our various service components have devoted months of study and investigation into this personnel situation. Fortunately, action has followed study. The Congress has enacted legislation designed to provide additional military career incentives and the services themselves have improved their personnel administrative procedures to meet the problems involved in maintaining a "cold war" total military force of nearly 3 million men and women. A great deal remains to be done in both these areas—legislatively and administratively—but it is apparent that the importance of our service personnel and of their problems has penetrated the national consciousness.

If we accept the hard truth that we must maintain for an indefinite period of time active military forces much larger than we have ever had in a period short of war, we must, of course also accept the corollary. Military service has become an integral part of the American way of life and the great majority of our male population can expect to wear a uniform at some period of their lives. The old adage "Don't fight the problem" is a familiar military slogan. Civilians too would do well to give this slogan a second, serious thought. Fighting the problem—refusing to accept the idea of military service as a citizenship obligation—is no solution. To solve this problem, we Americans must learn to live with it.

The maintenance of relatively large military forces in the face of a heavy annual turnover of personnel is a costly matter. We may take some comfort from the fact that military technical training contributes to the over-all skill resources of the country as a whole but the manager in uniform is primarily interested in retaining the personnel he has trained, not in seeing them leave the service at the end of their enlistment period to take skilled jobs in business or industry. Hence the great emphasis on Career Incentive Programs and Career Attractiveness Programs aimed at reducing the turnover of personnel and increasing the percentage of career motivated men and women. This

whole problem was highlighted by the President in his special message of January 1955 to the Congress of the United States when he stated:

"To sustain our active forces at required level of strength and efficiency, it is necessary to increase the present rate of voluntary enlistments . . . and to induce volunteers, both officers and enlisted men, to continue in the service on a career basis . . ."

"These objectives require compensation which is more in line with that offered by private industry. They also require strengthening of traditional service benefits in recognition of the unusual difficulties facing the serviceman and his family."

The Reenlistment Bonus Act, the Dependent Medical Care Act, the Survivors Benefits Act, the Regular Officer Augmentation Act, the Medical and Dental Officer Career Incentive Act are all important steps in support of greater military career attractiveness and, as a consequence, more effective management.

Yet, even if a much larger percentage of our military personnel can be persuaded to choose the Army, Navy, Marine Corps, or Air Force as a life career, our managerial responsibilities are by no means reduced. Equally complex are the problems connected with the training, distribution and optimum utilization of the thousands of human beings who enter the military services every week. These humans come in with assorted mental capacities, job experiences, attitudes and ambitions. Similarly, there are wide variations in the kinds of tasks to be performed, ranging from the simplest kind of messenger duty to the highly technical electronics type of assignment. Management success in these areas means utilizing all our human resources so that each individual's potentialities are developed to the greatest degree possible and, at the same time, dividing the multitudinous work projects that must be done in the military service into components small enough for human minds to master. Trying to place nearly 3 million round pegs in round holes is no simple personnel responsibility! Yet this is exactly what we must attempt to

do at every level of management if we are to maintain our fighting efficiency and our technological superiority.

Fortunately for the military personnel managers, the established career patterns of the services, which vary to some degree in accordance with the mission of each component, contribute materially to the objective of optimum utilization of human resources. Formalized training, rotation, promotion procedures and career planning are among the principal aids which help us to achieve good management.

For example, it is no exaggeration to say that the Navy maintains a global, continuous training program and that opportunities for advanced schooling are extended to both officers and enlisted personnel throughout their entire naval careers. Certainly formalized training is a sound investment and pays substantial dividends in increased


efficiency. Few business or industrial organizations can boast as comprehensive a training program for their employees. Rotation of duty assignments is another useful technique utilized by the military services to develop well-rounded, experienced leaders at every level of command. A companion technique—career planning—means that for the most capable there is a clear cut ladder of advancement from the bottom to the top. Assignments are carefully controlled and career fields thoughtfully conceived so that jobs that lead into blind alleys are reduced to a minimum. The seaman "strikes" for a rating and he knows from the moment he starts learning his job as a potential Radioman or Air Controlman that ahead of him lie challenging opportunities, commensurate with his skill and mental capacities, to rise to the top as a Chief Petty Officer or perhaps to commissioned status. Reasonable opportunities for continuous advancements in rating at fairly regular intervals and reasonable assurances of being retained in the service until retirement are valuable assets for career military personnel. And every Navy man or woman knows that service wide competitive examinations, in the case of enlisted personnel, and formally constituted Selection Boards for officers provide promotion systems which assure fair and equitable treatment for all.

So far I have been talking of service personnel without regard to sex. How, you may ask, do Navy women fit into this management picture and what managerial problems are there which may be unique among the WAVES? First, it is important to appreciate the fact that Navy women are an integral part of the United States Navy. They fill military jobs both in the Continental United States and at selected overseas bases. They may also serve on hospital ships, transports and airplanes, but are prohibited by law from serving on combat ships or on aircraft on combat missions. Secondly, Navy WAVES, like the women in the other military services, have a two-fold mission: to make available to the Navy their skills in non-combat jobs which they can per-

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form as well or, in some cases, better than men, and to serve as a mobilization base of military personnel who would provide the necessary leadership and experience to spearhead the training and effective utilization of vast numbers of young women who would be needed by the Navy to meet our personnel requirement in time of war.

Lastly, Navy WAVES work side by side with Navy men at the many jobs which need to be done throughout the vast Shore Establishment in support of our Fleets. Men and women hold the same job titles, receive the same pay, and are subject to the same military regulations and the same military discipline.

In my present assignment as Assistant Chief for Women, I am in fact a managerial assistant or staff officer serving directly under the Chief of Naval Personnel. At each Naval District or Naval Air Training Command headquarters a woman officer is designated to serve in a similar advisory capacity to the Admiral in command and at every naval activity under these various headquarters a woman officer is named by the Commanding Officer to advise him on matters concerned with the administration of women in the Navy. It is important to note that at every level of command these women naval officers serve purely as staff officers or advisors. The Commanding Officer, the District Commandant and so on up the line to the Chief of Naval Personnel—these men are the "bosses" of our Navy women as well as our Navy men and have the ultimate responsibility for their training, housing, welfare, recreation, discipline and job assignments. In addition to the designated woman officer, the Commanding Officer also has the assistance of his personnel officers, welfare and recreation officer, doctors, chaplains, training officer and various other staff officers to help him with his managerial responsibilities. In contrast to most civilian managers, however, these responsibilities continue around the clock, for our military managers are just as responsible for the personnel who serve under them when they are in the barracks or off duty

as they are when they are on duty as they are when they are on the job, ashore or afloat. In short, leadership and supervisory responsibilities in the military family are really "all-hands" jobs with every commissioned and petty officer charged with the responsibility of assisting the Commanding Officer in his efforts to maintain effective and equitable management policies.

Because the women are an integral part of this system the personnel problems peculiar to them as a group are few indeed. In a period short of war, women are permitted to leave the service prior to completion of their enlistment contract if they are married and wish to be discharged. Obviously men do not have this privilege and even the women must complete stated periods of service in return for their Navy training before they may request separation. Pregnancy is always a reason for discharge. These policies, we feel, are entirely realistic and very much in keeping with our American morals and our national attitudes toward home and family life. The other personnel policy which frankly acknowledges a respect for our national morals is in the area of utilization and assignment. Women are not utilized in remote areas nor assigned to jobs which for physiological reasons would be wholly inappropriate. The Congress itself has also placed limitations on the assignment of women to combatant ships and planes engaged in combat missions.

In summary, we in the Navy believe that good management in the field of human resources means striving constantly toward the establishment of better personnel policies which will permit the optimum utilization of every man and woman in uniform and, at the same time, providing our personnel with career incentives that will make them proud and happy to be discharging their citizenship responsibilities by serving in our Armed Forces.

### **Servicemen Graduate From Reactor Course At Univ. of Virginia**

Washington (AFPS)—Some 29 members of the Armed Forces and an Army civilian employee re-

cently completed a five months' course in nuclear power at the University of Virginia in Charlottesville.

The graduates will operate the Army package power reactor now being built at Ft. Belvoir, Va.

Some members of the class will go to Schenectady, N.Y., for additional training before returning to Belvoir. The other students will receive practical reactor experience in Chicago or at a testing station in Idaho.

Capt. Richard W. Graham, administrative officer, is senior member of the first atomic reactor cadre, which include three Engineer warrant officers, 16 Army, six Navy and three Air Force enlisted men.

### **Surface-to-Surface Missile Announced by Martin**

The Martin Company, Baltimore, has announced a new surface-to-surface guided missile, Lacrosse, now in production for the Ordnance Corps, U.S. Army.

Designed for close support operation on the battlefield, with emphasis on accuracy and mobility, the essential components are the missile, a launcher mounted on a standard Army truck, and a guidance station.

The Lacrosse system was developed under Army Ordnance contract by the Cornell Aeronautical Laboratory, Buffalo, N.Y., and is being produced by the Baltimore facilities of the Martin Company.

### **Runway Rock n' Roll Subject of AF Beam**

Washington (AFPS)—A new electronic device that takes "statistical pictures" of the "rock n' roll" in runways can predict damage to a plane during taxiing and take-off.

Used by the Air Research and Development Command to check irregularities in landing strips, a small wheeled unit throws a light beam every half foot actually charting a profile of the runway.

The results show a runway's tendency to cause plane vibration during take-off, when aircraft undergo their toughest structural trials, ARDC said.

The unit thus far has been used successfully at three Air Force bases.

## Flying Ice

Down in Atlanta where ice is common only in Cokes, experimental engineers at Lockheed's Georgia Division are making Arctic test on C-130 Hercules fuselage sections by driving 40 pound blocks of man-made ice against the metal sections to be tested. The ice is held securely by steel bars to an auto

which is driven down the runway at 100 feet per second (C-130 landing speed) so that the ice block scrapes the stationary fuselage section. In reverse, the test simulates the landing of a plane in the Arctic where ice mounds are common on the runways. Purpose of the test is to determine the best protective "ice armour" for the Air Force's new turbo-prop cargo-troop carrier.



# Book Reviews

by D. D. Corrigan

## Military Classics

"THE POWER OF PERSONALITY IN WAR," by Major General Baron von Freytag-Loringhoven (Military Service Publishing Company, 167 pages, \$3.00).

"MILITARY INSTITUTIONS OF THE ROMANS," by Flavius Vegetius Renatus (Military Service Publishing Company, 114 pages, \$2.00).

Usually I would avoid the words "classic literature," in a review, as these two words will often make the strongest man turn pale and the bravest man falter. However, these two small books are military classics and should be of interest to members of the Armed Forces because they are each a masterpiece on the art and science of war. Thinking military men will find them a worthwhile addition or basis for a military library. Each are translations; the first from the German, and the second from Latin, each depicting a different period in history. Each author is recognized as a great military thinker of his time, with significant words for every succeeding generation.

Although these men are separated by centuries of time, each is concerned with similar situations. Opinions and advice are given on leadership, discipline, universal military training, gaining confidence by the leader of the men for which he is responsible, and coalition warfare. To the man who is today concerned with these problems, it often seems that these are new situations, but in broad terms

these matters are age-old and have been studied in various ways and means for many generations. While the past ways are not always the best for modern terms, it is illuminating to study past records, for by the past and present the future can be planned.

For nineteen centuries the words of Vegetius were accepted by the western world as words of wisdom and his combined books, now under the title of "Military Institutions of the Romans," were considered as being the most influential of all military treatises. Henry II, Richard Coeur de Lion, Charlemagne, Montecuculli, and many others referred often to these works. Many of the traditions and organization of the Roman army as outlined by Vegetius are apparent still today in our own military institutions. It was Vegetius who first said, "He, therefore, who desires peace, should prepare for war." His treatise begins with the discipline and training of recruits. Drills, selection of recruits, arms, camps, and marches are explained in terms of discipline and action. The second section is devoted to the organization and the legion, with details of promotion, guard and duty rosters, the use of

the trumpet, pay deposits, and duties and responsibilities of officers. The last section deals with strategy and tactics, and narrates the use of reserves, formations, maneuvers, handling raw troops, improving morale, and preserving health. The general maxims which conclude the book are universal axioms as cognizant today as they were years ago when the eagle was the symbol of the might of the Roman army.

General Greytag-Loringhoven was a prolific writer, having written fifteen books on military subjects, many pamphlets for the German army, and a contributor to the German Army's quarterly military review. He is best remembered now, thirty-two years after his death, for "The Power of Personality in War," a book dealing with an interpretation and supplementary material on the observations of Clausewitz. The Prussian officer Clausewitz lived from 1780 to 1831, and his philosophy of war founded a modern strategy that has become in many countries a basis of military study. The words of a Prussian officer as explained by another Prussian General will not always be accepted by members of the Armed Forces of the United States, but will be viewed as provocative and forceful.

The important theories of Clausewitz deal with the psychological aspects of the personalities of leaders on the results shown on the battlefield. The author uses actual events in history to illustrate the reason for success and failure. Frederick the Great is shown as a powerful personality whose boldness influenced greatly his troops and the Seven Years War. An analysis of the Army of General Lee in the American Civil War points up the personality of the leader in offensive and defensive tactics. Military events are followed closely up to the close of the Russo-Japanese War.

Development of Esprit de Corps, self sacrifice, audacity, prudence, boldness, are explained in relationship to the leader and his men. Military training, hardships of war, source of manpower, endurance, are related to physical exertions. Clausewitz claims that the human element and the insignificant cir-

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cumstance are not to be overlooked. The psychological aspects of leadership are well illustrated with actual events, making this a colorful and informative study.

### Exploring The Unknown

"SECRETS OF SPACE FLIGHT," by Lloyd Mallan (Arco, 144 pages, \$2.00).

This is a picture-story, telling by photographs and words the exciting past, present, and future of space travel. Mr. Mallan's book, "Men, Rockets and Space Rats," was reviewed in the June 1956 issue of ARMED FORCES MANAGEMENT and it is with pleasure that we present his latest book, "Secrets of Space Flight."

Lloyd Mallan begins his new book with the statement, "Manned spaceflight will be a reality within the next 20 years, according to a majority of the men who should know." When manned spaceflight is achieved, laymen will probably focus their attention and give the credit to the pilot, but actually all fields will have contributed their skills and talents to make this event a reality. An appraisal is given as to the achievements and struggles necessary in the field of science in the progress toward flight into space.

Many of the pictures used are exclusive, and have not appeared in print before. The author flew 18,000 miles under military auspices in order to gather information. He writes in an informal style, making the book entertaining as well as informative.

A friend of mine saw this book on my desk, and attracted by the colorful cover, asked what the secrets of this space travel book were all about. Of course there are no secrets disclosed that would be detrimental to national security, but the secrets are those disclosures that are possible to tell. Many people are just not aware of the newest developments.

The reader will find out how anthropologists designed the prone-position bed for tolerance to gravity-pull. The story of the South American water turtle who experienced a permanent injury to his ear led to significant data on weightlessness. Carefully explained is the no-gravity situation achieved by

pushing an airplane up and over the top of a ballistic curve. The many photographs of space suits and exposure clothing show how the Wright Aero Medical Laboratory is keeping at least five years ahead of mechanical progress in space medical research. Rockets, spaceships, supersonic aircraft are all explained in terms of the present and the future.

The concluding chapter deals with flying saucers and the author's conclusions. His own investigations do not allow him to say there is no such thing as a flying saucer, but on the other hand, he does not feel there has been sufficient evidence to prove the reality of confused reports.

Years of experience in writing and study of aviation and rocket research qualifies Mr. Mallan to write, "Secrets of Space Flight." He is a member of the American Rocket Society and the British Interplanetary Society.

### Two Specialized Books

"MODERN MARINE ENGINEERING," by D. W. Rudorff (Philosophical Library, 154 pages, \$4.75).

Significant changes have taken place in marine engineering since the war, and more changes are anticipated with the advent of the gas turbine. The author has attempted to give a non-technical review of the various types of propulsion plants used in the construction of vessels. Subjects covered are diesel engines, boilers and condensers, geared steam turbine drive, turbo-electric propulsion, gas turbines, and ships' steering gear. An up to date view on the modern trend in marine engineering.

"MODERN NAVAL ARCHITECTURE," by W. Muckle (Philosophical Library, 154 pages, \$4.75). The author states that "naval

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cooperation with concomitant increased productivity (or reduced costs).

The October issue of *Atorgenics Aspects*, an Academy publication, contains information about *Atorgenics*, the Academy, and membership. The lead article is "Steps En Route To Atorgenics" by Leland B. Kuhre; in it he gives the step by step unfoldment of ideas; from setting the task in 1935, to the key concept of 1945, to the unifying principle of 1955. Because of its summarizing content, a special printing of the October issue is available at the single copy price of 50¢.

*Atorgenics Aspects* is now published monthly except July and August; it is presently in twelve-page self-covered magazine format en route to a larger size; and it is available by subscription at \$4.50 per year.

The monograph in book format, "Organization — From Empiricism to Principle", (reprinted from its first publication in Jan-June 1956 in six installments in *Armed Forces Management* magazine, plus added supplementary material) contains the essence of applied *Atorgenics* as expressed at that time. This monograph may be purchased for \$2.50.

For more facts request No. 90 on reply card



architecture although not an exact science has nevertheless become a science and it is possible for the designer with the knowledge which he now has available to produce a ship which will fulfill given requirements. It is the purpose of this book to discuss in broad general terms how this is accomplished, and to give an account of the various problems which the naval architect must solve."

**A Handy Reference Book**  
**"COMPANY ADMINISTRATION AND THE PERSONNEL SECTION,"** by Colonel C. M. Virtue (Military Service Publishing Company, 412 pages, \$3.75).

Colonel Virtue's book has served the army well for many years. This new revision makes the 24th edition in 22 years, bringing the unit administration and personnel management completely up to date. The new MOS system is covered, along with the NCO-Specialist plan, modifications to the supply system, details of the new Forms 20, 24 and 66, and changes in pay and allowances.

The purpose of this standard guide is to provide a reference on the regulations, manuals, and official instructions affecting the administration of a company or similar unit, and to explain required reports and records. The book has been divided into two sections; the first dealing with those matters which the company commander directly controls, and the second containing material on which the personnel officer is responsible. Much factual information is given which will be of great value, but intangible data is also covered. Management problems and recommendations are given as to human behavior, interviewing, necessary stimulus to work, and how to have good administration.

It should not be necessary to state what a basic and worthwhile book this is for reference and understanding. "Company Administration," has been in demand for many years, and any book that reaches the 24th edition has proven it contains vital and authoritative information. Colonel Virtue has written a book that has been of great aid to army paper work, and has been well received.

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### Recommended Books

**"ETIQUETTE AND PROTOCOL,"** by I. Monte Radlovic (Harcourt, Brace, \$3.95).

A new handbook giving the answers to many questions that arise in diplomatic or government social circles, covering the basic code of behavior for members of the Armed Forces and Diplomatic corps at home or abroad.

**"THE RETIREMENT HAND BOOK,"** by Joseph C. Buckley, (Harper & Brothers, 329 pages, \$3.95).

Timely advice for civilians or military personnel who are reaching the age of retirement, with hints on financial matters, new interests, and health.

**"MILITARY CUSTOMS AND TRADITIONS,"** by Major Mark M. Boatner, III (David McKay, 176 pages, \$2.75).

Credit is due to Major Boatner for furnishing this valuable book on a subject that has long been neglected by other authors.

**"THE FBI STORY: A Report to the People,"** by Don Whitehead (Random House, \$4.95).

The inside story of the FBI, beginning with the founding in 1908 and up to the current activities. Mr. J. Edgar Hoover writes the forward. The author was given access to records and answers to his questions to write this unique report of the FBI.

**"THE EXECUTIVE LIFE,"** by the Editors of Fortune, (Doubleday, 223 pages, \$3.50).

An analysis of the type of man that leads industry and business today, with glimpses as to his personal and public life.

**"GALIPOLI,"** by Alan Moorehead (Harper, 369 pages, \$4.50).

Many talented men have written of this military campaign, but none more excitingly than Mr. Moorehead.

**"THE MIND GOES FORTH,"** by Harry and Bonaro Overstreet, (Norton, \$3.95).

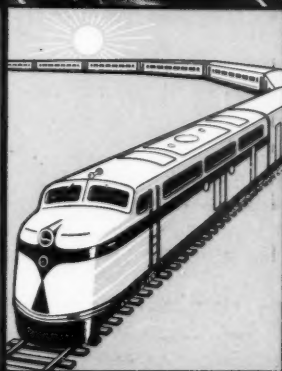
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